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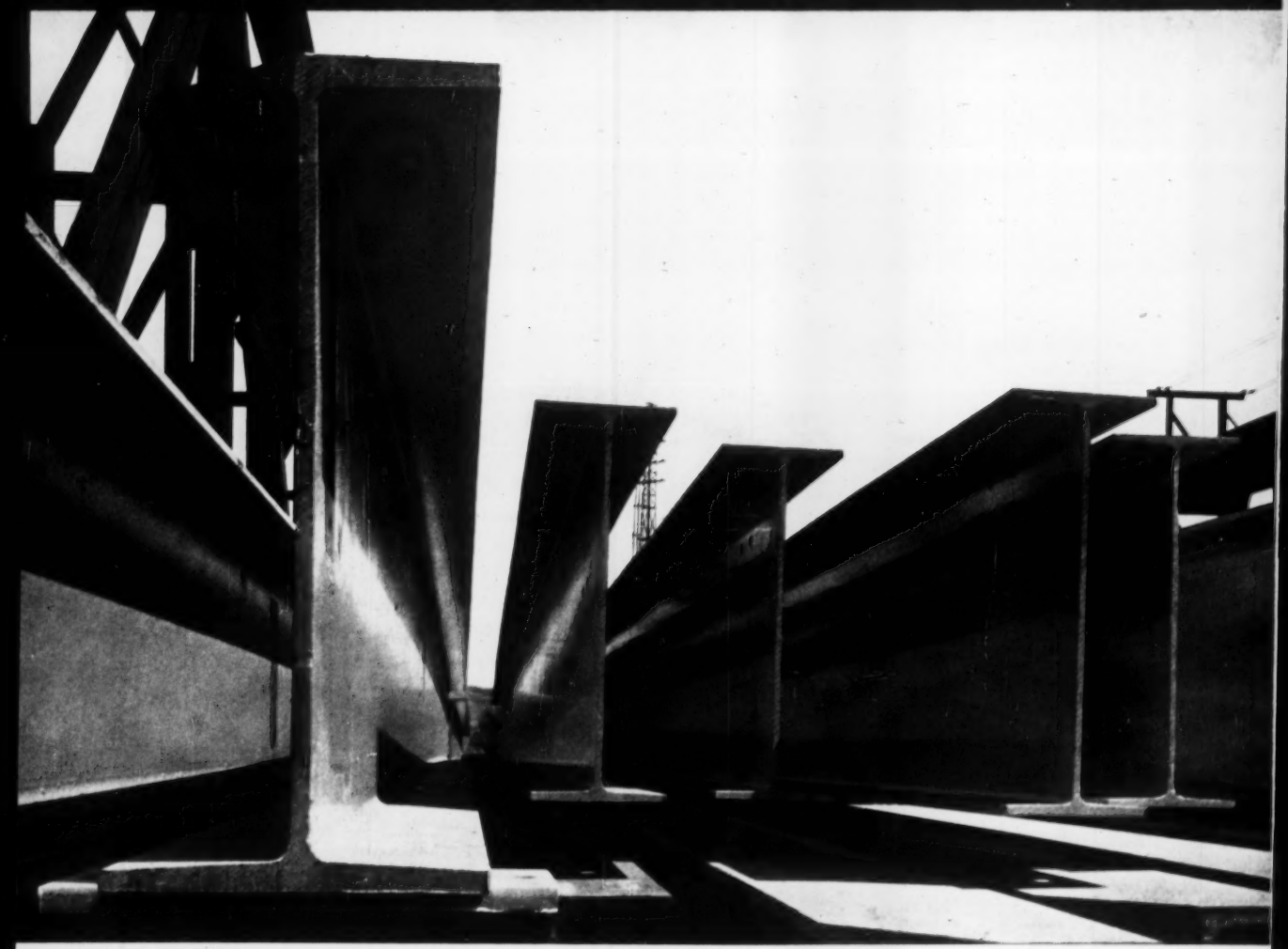

The outlook for more structural steel p. 21

ANN ARBOR MICH
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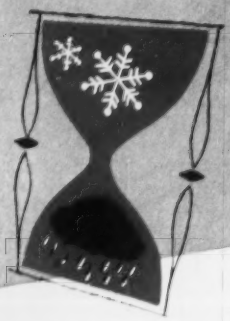
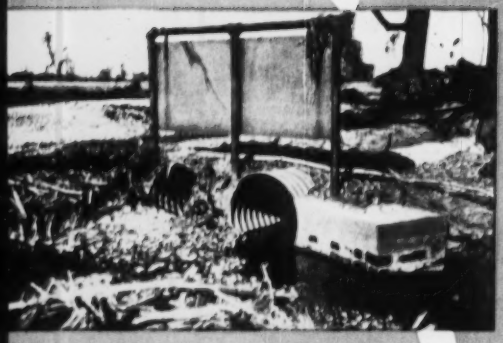


Armco twin culvert, installed in 1907, as it looks today.

TWIN ARMCO CULVERT SURVIVES 49 HAZARDOUS YEARS

In 1907, twin 24-inch diameter Armco Corrugated Metal Pipes were installed under a well-traveled Ohio road. Today, 49 years and 2 floods later, this culvert is still giving excellent service and will last for years to come. Durability is a feature of Armco Corrugated Metal Drainage Structures. Equally important is the fact that Armco Structures have a low initial cost and allow installation economies. No special skill is needed for assembly; jobs go fast.

Armco Corrugated Metal Pipe is available in diameters ranging from 8 inches to 15 feet, in a variety of gages. Armco Pipe-Arch Structures are supplied in comparative sizes. Write for more data. Armco Drainage & Metal Products, Inc., 4256 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



Flood in 1913 washed out the road, but left pipes undamaged. Same thing happened two years later.

In 1919 the pipe got a new concrete headwall and the highway was re-surfaced with brick.

ARMCO

Corrugated Metal Drainage Structures

Allis-Chalmers Scraper and Tractor Fleet Moves Four and a half Million Cubic Yards

Four HD-16 tractors with 20-cu. yd. Allis-Chalmers scrapers level a hill to make a large fill. Torque converter drive helps units return uphill fast for next load . . . cut valuable time from every cycle.

Never an idle moment for Allis-Chalmers tractors—when not push-loading they are busy dozing. An HD-21, right rear, compacts earth with a sheeps'-foot roller.

Motor Scrapers and HD-21's and HD-16's with pull-type scrapers level steep grades on Millbrae project near San Francisco

In leveling 50 acres of rugged California hills to complete its Millbrae housing project just south of San Francisco, Trousdale Construction Co. is moving 4½ million cubic yards of earth—with over a million cubic yards to be placed on a single fill.

To handle the job, Trousdale called on Tecon Construction Co. of Dallas, Texas. Tecon called on its fleet of Allis-Chalmers torque converter drive crawler tractors—six HD-21's and six HD-16's. In addition, Tecon brought in a fleet of Allis-Chalmers pull-type and motor scrapers to do the dirt hauling.

On this big project, the HD-21's and HD-16's are overcoming steep grades and stubborn hills. One reason: torque converter drive which makes full use of maximum engine horsepower . . . automatically matches tractor speed and pull to load and terrain conditions . . . provides outstanding operating ease . . . eliminates engine stalling and most shifting, reduces shock and strains to power train.

Other reasons: Allis-Chalmers diesel engine design causes exploding fuel to exert follow-through push on the pistons . . . provides maximum leverage when crankshaft is at most favorable angle . . . eliminates combustion knock, gives complete, clean combustion and more usable power per drop of fuel.

As the going gets tougher on this job, other HD-21 and HD-16 advanced design features show their superiority: all-steel box-A main frame, 1,000-hr lubrication, straddle-mounted final drives, Tru-Dimension machined and hardened track—all help these big tractors deliver the goods in output, dependability and service simplicity. Let your Allis-Chalmers dealer prove it!

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Delivered the exact lengths of MP116 piling needed to prevent any danger of losing a dam through river floods or cave-ins on this cofferdam job. An efficient delivery assured contractors Brown & Root an uninterrupted work schedule.

Cofferdam construction for AUSTIN, TEXAS POWER HOUSE on Banks of Colorado River. Steel-sheet piling, supplied by L. B. Foster Co., was used in 35 to 40 ft. lengths to make up the cofferdam which will be filled with 120,000 cu. ft. of concrete.

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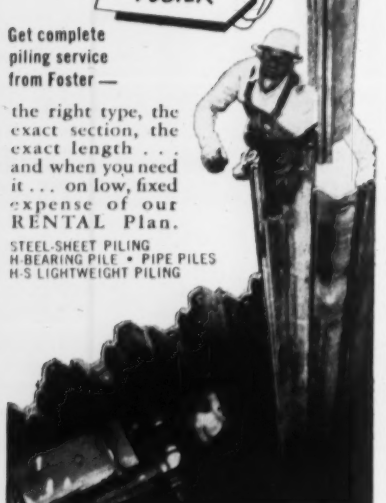

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ENGINEERING NEWS-RECORD Vol. 156, No. 11 March 15, 1956

Published weekly by McGraw-Hill Publishing Company. James H. McGraw (1860-1948), Founder **Executive, Editorial, Advertising and Subscription Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Publication Office, 99-129 North Broadway, Albany 1, N. Y. Donald C. McGraw, President; Paul Montgomery, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Circulation Director. **SUBSCRIPTIONS:** Address correspondence to Engineering News-Record, Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address. Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. **Position and company connection must be indicated on subscription orders.** Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere and the Philippines, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries $20.00 a year; $30.00 for two years; $40.00 for three years. Second class mail privileges authorized at Albany, New York. Printed in U. S. A. Copyright 1956 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.

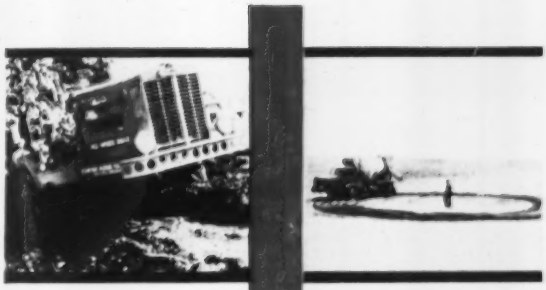
18,000 pound payload on each axle of 4-wheel drive

OSHKOSH 50/50

INCREASES PROFITS

for National Ready-Mixed Concrete Co.
Lancaster, California

Coast to coast ready-mixed concrete companies — like National of Lancaster, Cal. — find the Oshkosh 50-50 is a real profit maker! Here's 4-wheel drive traction to go where other concrete carriers can't go — to get jobs competition can't handle. With an Oshkosh 50-50, you get an 18,000 pound payload on each axle . . . easy maneuverability . . . quick load spotting . . . automatic locking center differential in transfer case . . . and other exclusive features. Ask for free demonstration. You'll be glad you did!



4-wheel drive provides sure-footed traction — makes tough going easy for Oshkosh.

Oshkosh's shorter wheel base means a smaller turning circle — greater maneuverability!

Have you seen Oshkosh's new "50-50" brochure? Write for your free copy today!

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Don't Buy Any

Tractor Mounted Back-hoe

Until You See

The New 1956

Sherman Power Digger

at Your

Ford Tractor Dealer

B.F.Goodrich

All-Nylon Universal tires eliminate impact breaks for rock company

LONG ROCK COMPANY of Princeville, Illinois, has hauled thousands of tons of stone in the past few years from quarry to crusher to road-construction site. Trucks must travel over rock and rough roads—conditions that used to rip and tear tires and run up costs.

Then Long Rock switched to new B. F. Goodrich *all-nylon* Universal tires. "These tires," writes James Long, "have eliminated impact breaks and do a fine job of resisting cuts and abrasions. Our switch to your *all-nylon* Universal tires has saved us down-time and hundreds of dollars annually."

B. F. Goodrich Universal tires give such outstanding service because the tread is specially compounded to resist rock cuts. The *all-nylon* cord body withstands double the impact of ordinary materials, resists heat blowouts and flex breaks. No wonder the *all-nylon* body outwears even the extra-thick tread, *can still be recapped over and over!*

See your B. F. Goodrich retailer today and find out how you can get longer service at lower cost with B. F. Goodrich *all-nylon* Universal tires. Or write *The B. F. Goodrich Co., Tire & Equipment Div., Akron 18, Ohio.*

"WE WOULDN'T USE any tires in our operations that were not of B. F. Goodrich *all-nylon* construction," writes James Long.

UNITS of County Concrete, Inc., Newtown, Ohio, roll on such tires as the BFG *all-nylon* All-Purpose. All replacements are BFG.

Specify B. F. Goodrich tires when ordering new equipment

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

Your B. F. Goodrich retailer is listed under Tires in the Yellow Pages of your phone book

Small job or Big project..

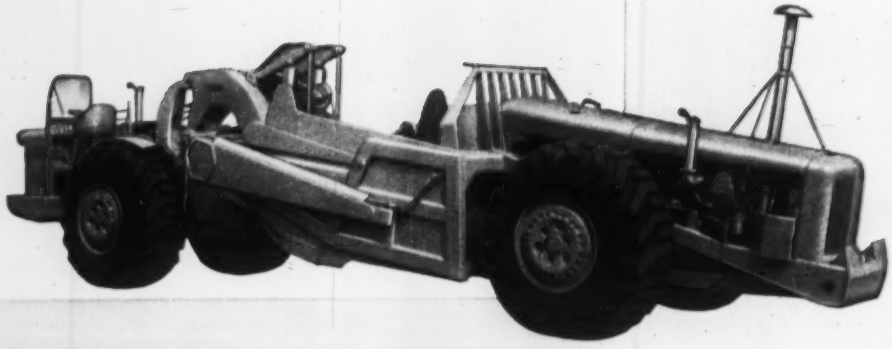
On this Florida Turnpike contract of Blythe Bros., two TS-18 "Eucs" loaded, hauled and dumped in sandy conditions that "hung up" other equipment. The tremendous power and traction of this Euclid scraper made it a logical choice for this tough job.

Western Contracting Corp. used 12 of these TS-18 Euclid Scrapers on a 7 million yard Indiana Turnpike job. Because of the extremely difficult sandy conditions, the tractors were equipped with 300 h.p. engines. Top extensions added 6½ yds. to the bowl capacity.

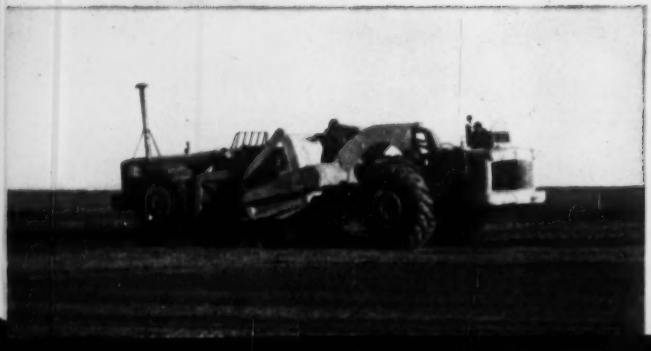
EUCLID TWIN POWER

in the TS-18 provides more work-ability than you get in any other scraper

Twin-Power—the use of two engines driving separate axles—was pioneered in the earth moving field by Euclid 10 years ago. Torque converters and semi-automatic transmissions assure easy operation and a smooth flow of power matched to all job conditions. One of Euclid's newest scraper models, the TS-18 uses power and drive components that have proved their dependable performance in other "Eucs" on hundreds of jobs.



The TS-18 is powered by two 218 h.p. engines—one in the tractor and another behind the scraper bowl. For work where even more power can be used, a 300 h.p. engine for the tractor is available. Both engines drive through separate Torqmatic Drives. Standard tires are 27.00 x 33 with 33.50x33 available as optional equipment.



Lever action and hydraulic control of bowl, apron and ejector make the TS-18 easy to operate. At the Glasgow Air Base in Montana, Harris Construction Co. used 4 of these Twin-Power Scrapers for grading and construction of runways.

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

this TS-18 "Euc" cuts earth moving costs!

VERSATILITY
for a wide range of work!

This TS-18 is the most recent development of the Twin-Power principle pioneered by Euclid and job proved in earlier scraper models. Its unequalled power and traction gets more work done... sets a new standard for low cost scraper yardage. Self-loading in practically any material from loose sand to hard shale, the TS-18 is a one-man earthmoving spread. It works on steep grades and under job conditions that stymie other scraper equipment.

Hydraulic lever action does away with cable headaches and expense. All scraper operations—bowl, apron and ejector—are independently controlled. All four of the hydraulic jacks are interchangeable... one spare fits anywhere. The low, wide bowl design and reversible four-section cutting blade make the TS-18 easy to load ...heaped loads up to 24 yds. are picked up fast.

Like all other Euclid Scrapers, the TS-18 is built to stay on the job with less down-time for servicing and repair. All major components are readily accessible... a feature that really pays off in more work-ability and lower maintenance cost. Your Euclid dealer has facts and figures showing why owners everywhere say that ***Euclids are your best investment.***

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

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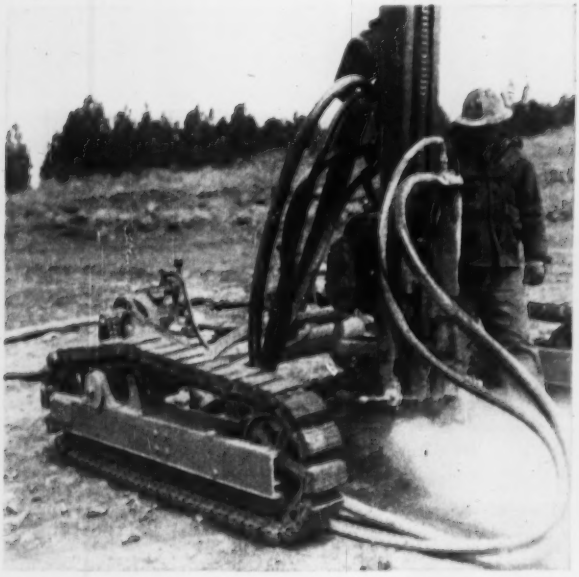
Scoots uphill

Goes most anywhere . . . tows own air power
Gardner-Denver self-propelled Air Trac



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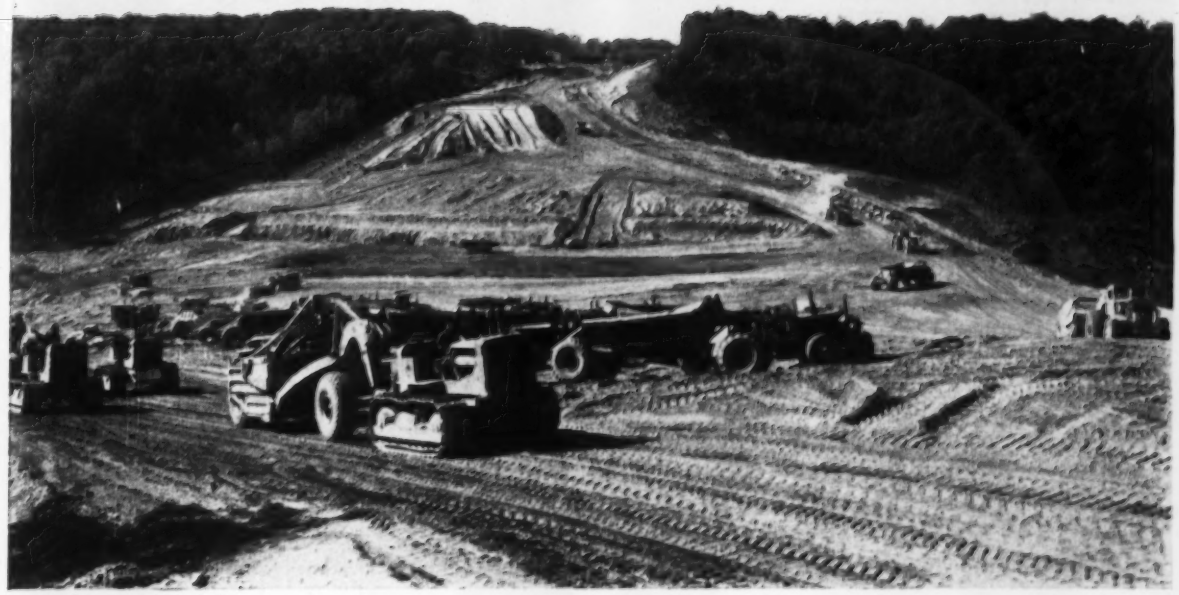
GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling

on Massachusetts Toll Highway Project

Grandview Construction Corp. of Mt. Vernon, N. Y., has the contract for approximately 10 miles of the new Massachusetts Toll Highway — in Palmer-Chicopee and North Wilbraham, Mass. The Palmer section requires the excavation of 2 million yards of earth and 650 thousand yards of rock. The photo reproduced here shows the area where a million 100 thousand yards of fill are required.



LIKE other leading contractors, Grandview Construction Corp. is mighty careful about controllable costs, particularly maintenance expense.

And that's an important reason why the Grandview Construction people selected Gulf as their supplier of petroleum products on the Massachusetts Toll Highway Project. They have found that Gulf quality lubricants keep their maintenance costs at rock bottom levels . . . and they appreciate Gulf's prompt delivery service and helpful petroleum engineering counsel.

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- . . . Because IRONITE Waterproofing has proved its ability to stand up indefinitely in some of the world's most famous buidings.

For further information write for Bulletin No. 701, IRONITE COMPANY, 208 South LaSalle Street, Chicago 4, Ill.

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Reader Comment

Standard Plans Have a Place

SIR—The editorial ENR Dec. 22, 1955, p. 68 is important enough to develop more mature thought on the subject of standard plans, perhaps in the form of an article.

The time factor to produce new plans in emergency periods should not be overlooked. Fitting of standard plans to the site is relatively simple and inexpensive and economizes in engineer effort which is in short supply. The myriad of details above ground level need not be repeated when good standard plans are utilized.

Standard plans, like handbooks, when not utilized by professionals result in grave errors, extra cost and sure failure. Standard plans are no substitute for brains.

COL. R. C. BROWN
U. S. Army

No Failures Due to Drafting

SIR—The editorial, "Faulty Drafting Practices," (ENR Dec. 1, 1955, p. 96) raises the question as to how many unexplained failures or reinforced concrete construction are traceable to the American Concrete Institute's "Manual of Standard Practice for Detailing Reinforced Concrete Structures." The answer is emphatically, "None!"

To one who in his daily work sees the plans and specifications of a great number of reinforced concrete structures (probably the bulk of the major structures this side of the Mississippi River at least), the improvement in drafting practice is very evident. The manual, as it clearly states, simplifies and standardizes methods of delineation, emphasizes the importance of the designer making clear his exact wishes, and, by its own statement, is not a design guide at all.

It is true that reinforcing steel has been shown in many fashions—single full lines, parallel double lines, heavy dashes, short dots. A careful examination of plans from all over the country (and a good deal of study was given to the matter) resulted in the practice recommended in the manual. A fairly thorough polling of those in the industry indicates that the recommendation has proved eminently satisfactory.

There have been failures of reinforced concrete structures—too many for those of us who labor in this field. I doubt, however, if there are very many where "investigators . . . could not ascertain the causes of the defects." In general, there seem to have been two types of failure: one where the designer did not make thoroughly clear his exact wishes, and the other where there were evident difficulties about the lapping, splicing, cutting, or bending of the reinforcing bars. In neither case would a different method of delineation have solved the difficulties.

When failures occur, everyone would appreciate a good clear-cut and immediate answer for guidance in the future, but casting doubts on the methods advocated in the manual is not going to help that situation at all. I do not know of any cases where drawings prepared according to the manual are "difficult to read," because that is contrary to all the text. If your editorial was based on speculation about possibilities, it may have done considerable disservice to the cause of uniform drafting procedures, while if it was based on definite factual information, that should be presented for guidance to the American Concrete Institute's Committee 315, which has its manual under constant study and review.

R. C. REESE
Consulting Engineer
Toledo, Ohio

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

CALENDAR

Fifth Inter-American Sanitary Engineering Congress, Lima, Peru, March 19-25.

American Institute of Steel Construction, Eighth Annual National Engineering Conference, Lehigh University, Bethlehem, Pa., April 4-6.

Western Association State Highway Officials Conference, Phoenix, Ariz., April 10, 11, 12, 13.

Purdue Industrial Waste Conference, Purdue Memorial Union, Lafayette, Ind., May 15-17.

American Institute of Architects, annual convention, Biltmore Hotel, Los Angeles, Calif., May 15-18.

Prestressed Concrete Institute, second annual convention, Hollywood Beach Hotel, Hollywood, Fla., May 16-18.

Society for Experimental Stress Analysis, spring meeting, William Penn Hotel, Pittsburgh, Pa., May 16-18.

Building Research Institute, annual meeting, Sheraton-Brock Hotel, Niagara Falls, Ont., May 21-22.

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LOGGING CONSTRUCTION MINING

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- GREATEST ever developed by tire engineers, this rugged new General L. C. M. more nearly approaches ideal crawler-like flotation and traction than any other tire.
- BUILT with opened-up tread design, the L. C. M. is truly an all-duty tire for all type operations. Reduced rolling resistance increases tread life.
- EXCLUSIVE stronger-than-steel Nygen Cord provides the new General L. C. M. with maximum protection against breaks, growth and damp rot.
- WIDER, heavier tread with deep-drive cleats protects sidewalls against costly cuts and snags... puts more rubber on the ground for less stress per-square-inch.

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AKRON, OHIO

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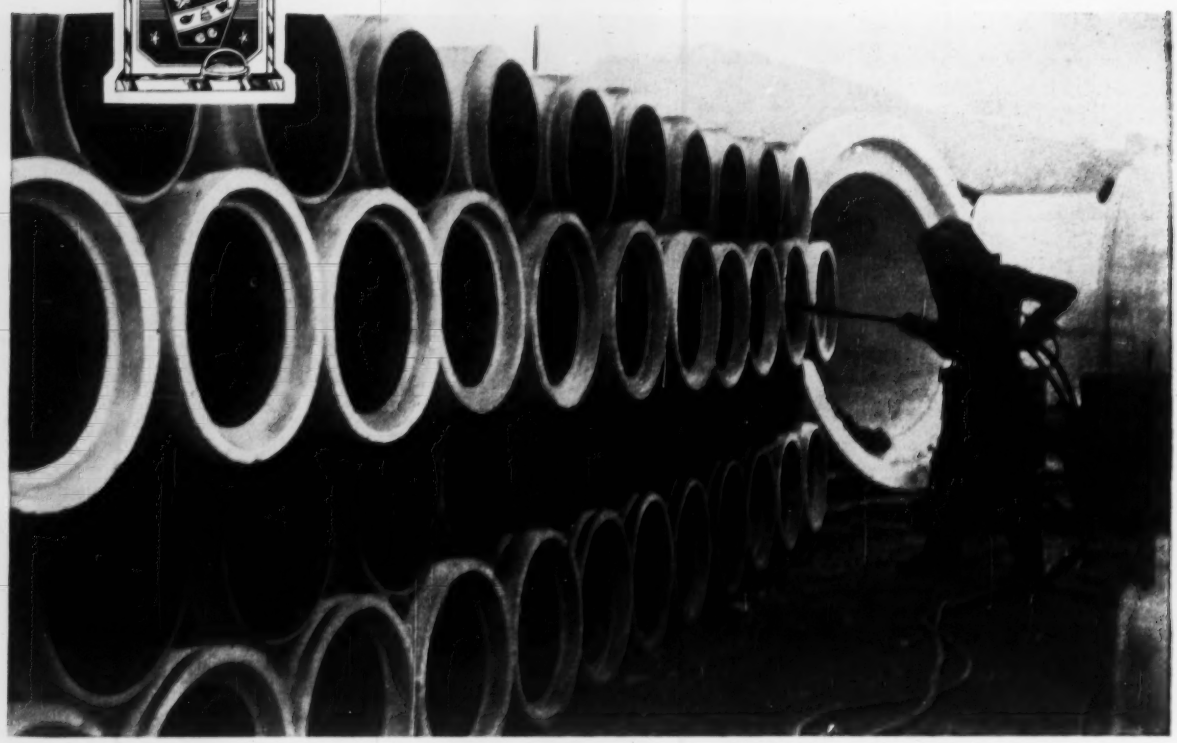

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Why take chances? *Pitt Chem* Cold Applied Tar Base Coatings can stop corrosion in your plant before it starts. These thick, tough, coal tar coatings last far longer than ordinary paints, yet they cost no more per gallon. *No other material does such an outstanding job of protection at so little cost.*

Pitt Chem coatings are easy and economical to apply by brush, roller or spray. They form a tight, lasting, water-proof bond with metal, masonry, concrete or stone. And above all, they *stop* sewage corrosion!

Don't delay! Call for a *Pitt Chem* corrosion engineer today to survey your specific problems. A call, wire or letter will bring his help.

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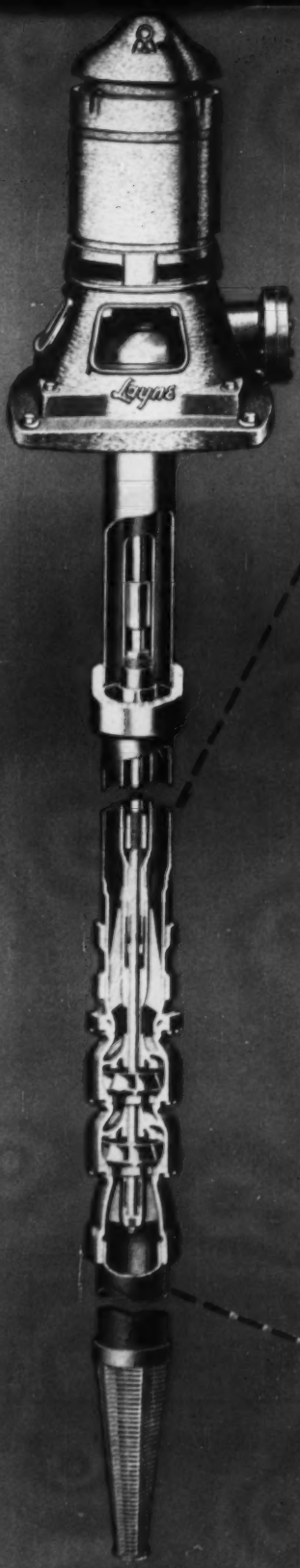

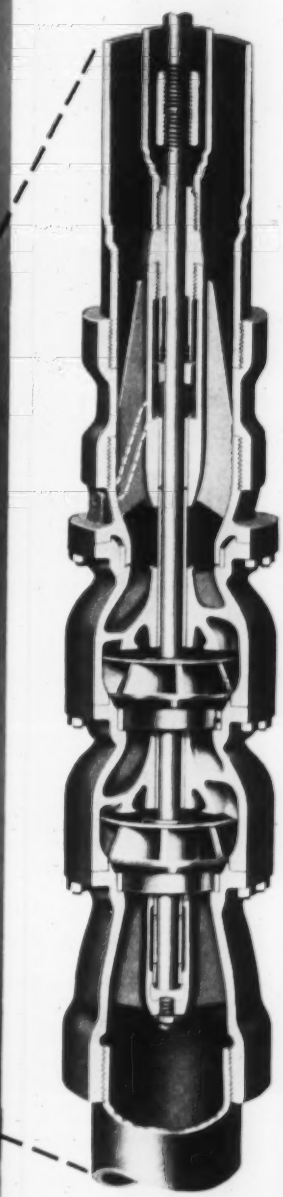

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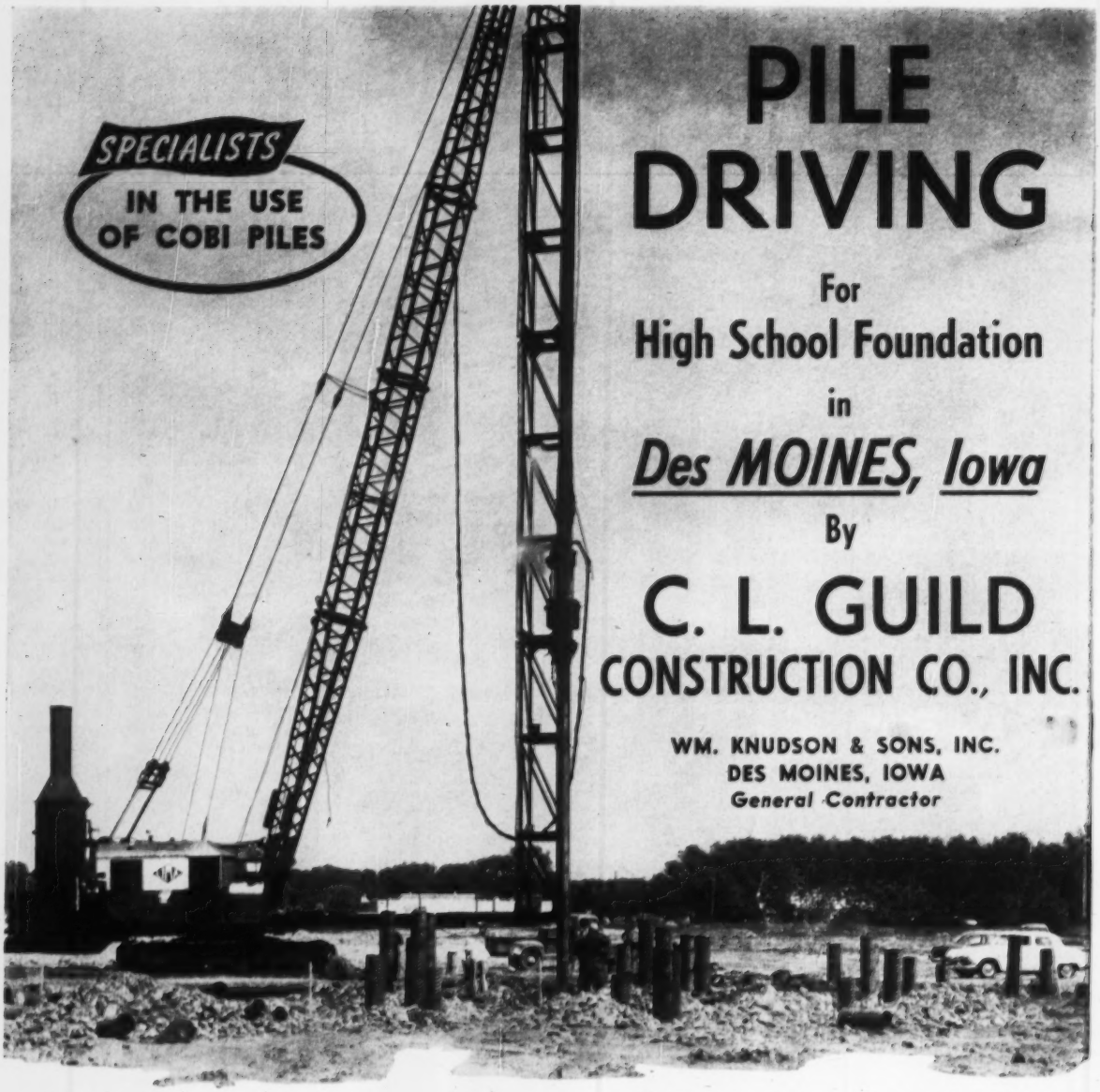

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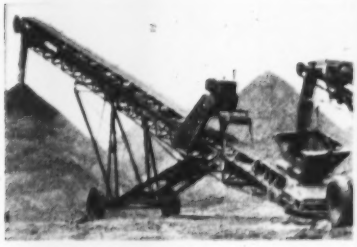
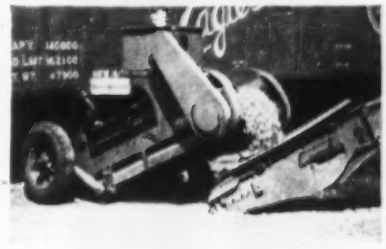


Model 374 cuts cost at high capacity. With capacities up to 425 t.p.h., this heavy-duty machine has antifriction bearings, shaft and gearbox drive, hydraulic boom hoist and other features.



Model 358 cuts cost of car unloading. Feeding a conveyor, this car unloader releases cranes and other expensive equipment for other work. Handles gravel, sand, stone, cinders, etc.

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ENGINEERING NEWS-RECORD

Vol. 156, No. 11 March 15, 1956

Number of copies printed this issue: 72,208

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THE CONSTRUCTION WEEK

UPPER COLORADO SPENDING—For the fiscal year beginning July 1 Congress is expected to vote $8 million to initiate construction planning on the $760-million Upper Colorado Project (ENR March 8, p. 21). About a $15-million appropriation will be made for the following fiscal year, then $60 million or $70 million for the third and fourth years and a level of about $40 million for the following 10 or 12 years. Contract awards, however, are expected to reach about $200 million in the first three years.

Construction will start with the $420-million Glen Canyon Dam, probably early in '57. Work on Flaming Gorge Dam is expected to start about 18 months thereafter. Participating irrigation units, including the $230-million Central Utah development, will probably get off to a modest start during the coming year.

BRAKE ON TOLL ROAD PLANS—Michigan and Indiana have decided to shelve proposed new toll road ventures until Congress acts on pending federal highway legislation.

The Michigan legislature has killed a bill that would have empowered the state's turnpike commission to survey any route as a toll road possibility. And, legislators indicate they will hold up on authorizing a $300-million bond issue to finance a proposed turnpike from the Ohio line to the Straits of Mackinac.

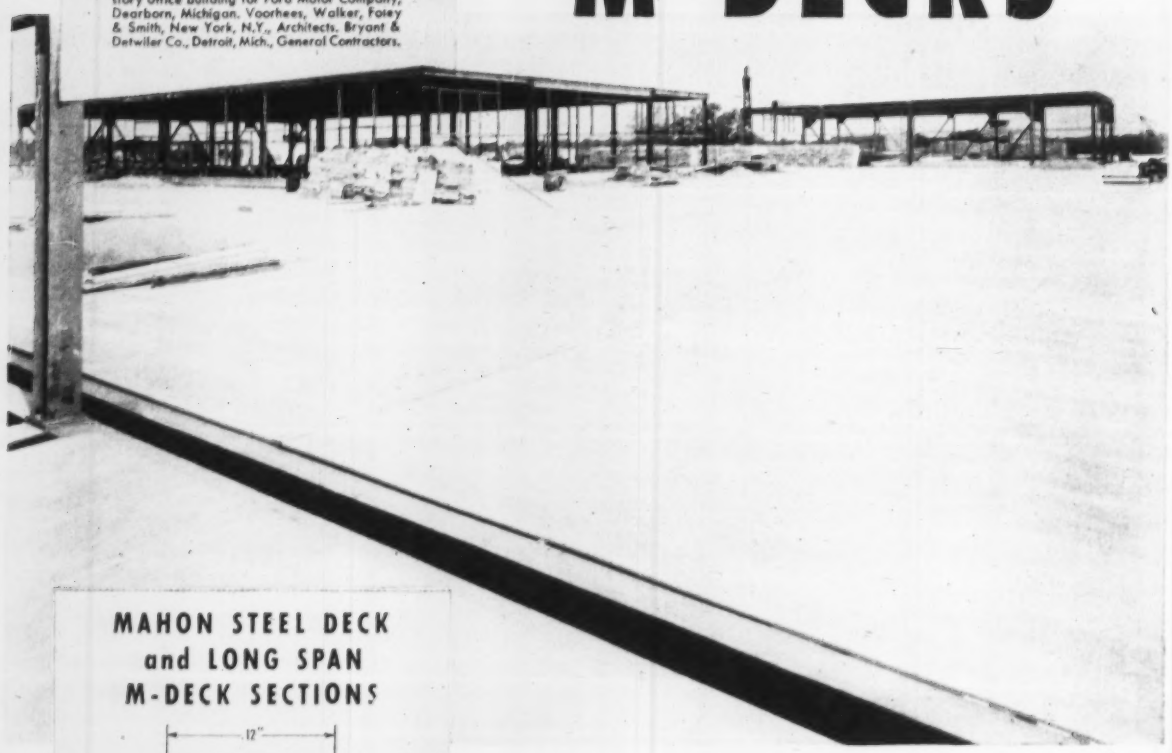
Although a feasibility survey of Indiana's proposed north-south turnpike from Lake Michigan to a point near Indianapolis will continue through the summer, no other steps will be taken to advance the project until Congress acts.

INDUSTRIAL BUILDING BOOMS—Contracts for industrial building for the first 11 weeks of this year total $1,080 million—149% over the same period in '55 and a peacetime record. This week's $276 million in awards is the highest weekly total since 1953.

RIGHT-OF-WAY FUND—The North Carolina Highway Commission is considering a proposal that the state maintain a revolving fund to buy rights-of-way in advance of construction. It would be similar to a procedure used by California.

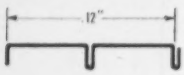
Apparently Florida is in need of some such means of curbing right-of-way speculation. Land that the turnpike commission had been getting for $200 an acre has doubled in price. Toughest situation, though, is in north Dade County, where up to $10,000 an acre has had to be paid because of the route cutting across several tracts which homebuilders had already started to develop.

STEEL DECK
and LONG SPAN
M-DECKS



Mahon Long Span M-Deck installed on a multi-story office building for Ford Motor Company, Dearborn, Michigan. Voorhees, Walker, Foley & Smith, New York, N.Y., Architects. Bryant & Detwiler Co., Detroit, Mich., General Contractors.

MAHON STEEL DECK and LONG SPAN M-DECK SECTIONS



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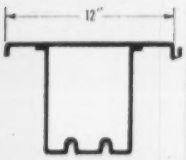
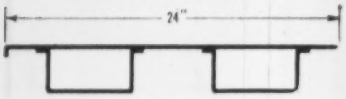
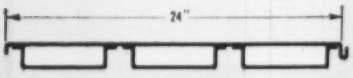


LONG SPAN M-DECK SECTION M1



LONG SPAN M-DECK SECTION M2



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MAHON

WASHINGTON OBSERVER

The big controversial issues in the highway program are up for consideration this week by the roads subcommittee of the House Public Works Committee, headed by Rep. George H. Fallon (D.-Md.)

The first vote puts Davis-Bacon prevailing wage requirements into the spending for a 40,000-mi. interstate network which calls for about $27-billion worth of spending.

The subcommittee was sharply divided and it's possible that the full committee may change this vote—in favor, say, of leaving minimum wages to state laws, as is now the case on federal-aid highway work.

AFL-CIO spokesmen claim they want Davis-Bacon only on the interstate program but actually they are backing other legislation in Congress which would give the federal government authority to set prevailing wages on all construction where federal grants are involved (see p. 129).

Other issues which will split House members sharply are these: Reimbursement of states for toll roads on the interstate system that meet the federal standards; size and weight limitations for trucks and buses; paying utilities for some of the cost of relocating lines on the right-of-way; barring service stations and the like from direct access; and the formula for apportioning federal interstate funds among the states.

The committee's decision on these can be crucial. Strategy now calls for permitting no amendments on the House floor. Thus members will have to vote up or down the package the committee approves, with no chance to write in amendments.

•

Construction contractors will get their first chance at lease-purchase projects this month. Three jobs, ranging from $1.5 million to $2 million, are about ready for bid announcements within a couple weeks. They are to be located at Council Bluffs, Iowa; Rock Island, Ill., and Green Bay, Wis.

Separate bids will be asked for construction and for financing, along with combination bids covering both. The Public Buildings Service will select whichever offers the lowest net cost to the government.

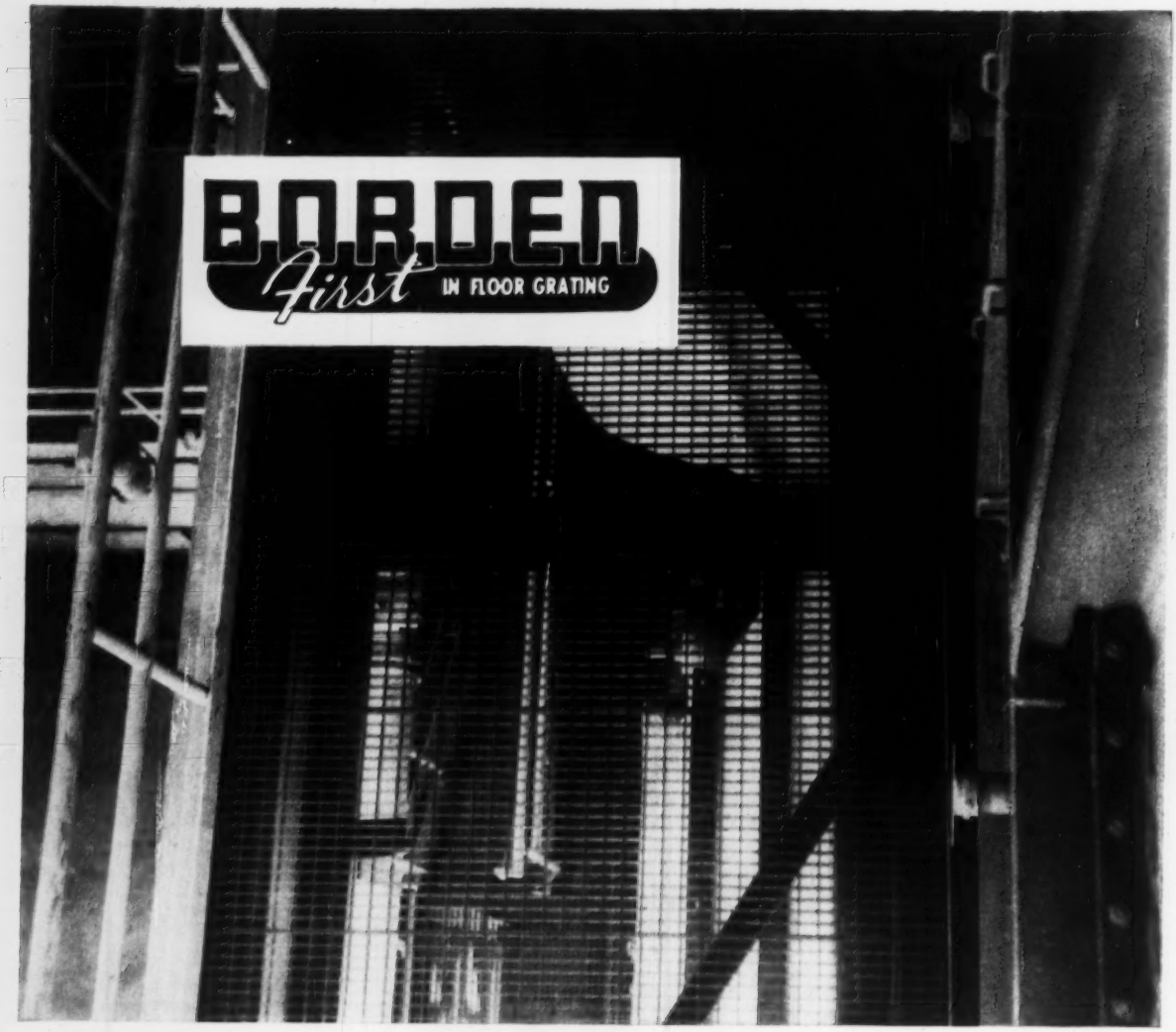
Decision to take separate bids was reached only a couple weeks ago. PBS had planned to ask only one package builder-investor bids, as the Post Office Department plans to do on its own lease-purchase building projects.

•

The Corps of Engineers is having a tough time hiring enough engineers to fill vacancies in its ranks. It employs more professional engineers than any of the other federal government agencies. More than 8,000 of the 57,000 employes in the Corps are engineers.

The big problem is pay, Maj. Gen. E. C. Itschner told the Senate Appropriations Committee: Under Civil Service, the Corps can offer $284 to $362 per month to graduates who are able to make upwards of $400 from private industry.

Itschner proposed two remedies—Restoration of the "professional" grades abolished by Congress in 1949 as a special Civil Service classification; and increasing from six to 30 the number of engineers the Corps can put in the $12,900-$14,800 per year top grades. Restoration of the "P" (professional) grades would boost morale, Itschner suggests; now engineers carry the same classifications as clerical and administrative job holders.



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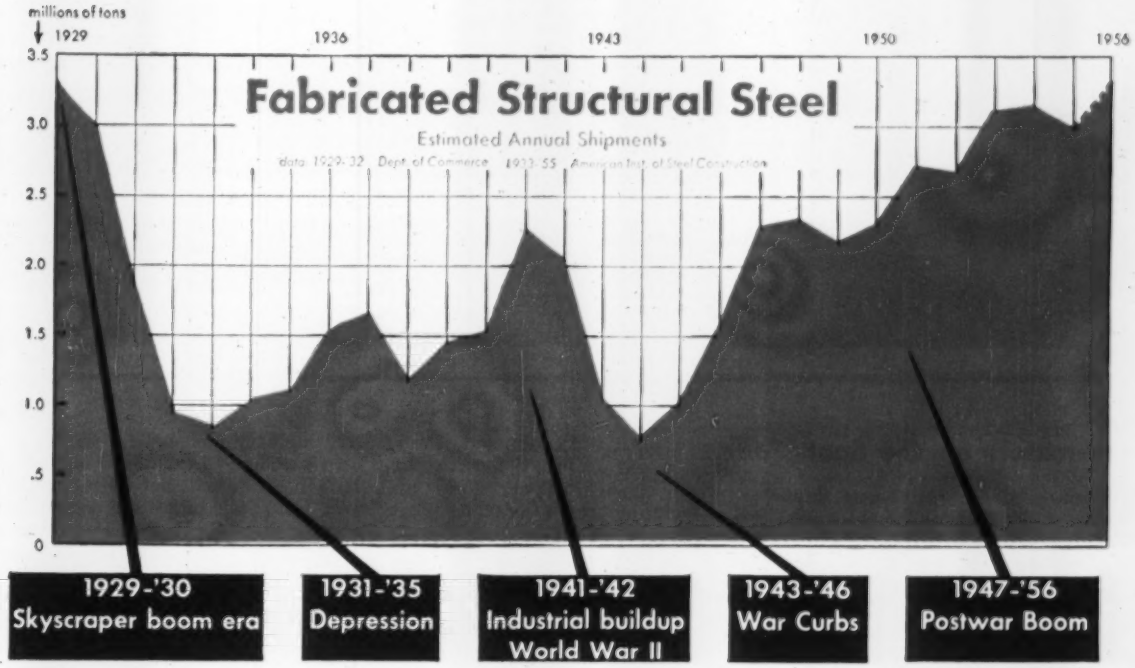


Although shipments are due to climb . . .

Record Demand Will Prolong Shortage

An ENR Staff Report

The year-old shortage of heavy structural steel shapes, which ranks as one of the most serious in the last 25 years, probably will not end until some time in 1957.

Optimistic reports during the fourth quarter of 1955 led many engineers and contractors to hope for an end of the shortage by late autumn of 1956. Those hopes have been dashed by a new surge of demand and the possibility of a steel strike in July.

Bookings and shipments of fabricated structural steel, compiled by the American Institute of Steel Construction, show the growing disparity between what the construction industry needs to sustain the biggest boom in history and what it is getting.

AISC, whose members account for 80% of the steel fabricating capacity in the nation, reported that this year's January bookings for fabricated structural steel, the latest figures available, set an all-time record for any month. The new orders received by the fabricators totaled 405,263 tons, 68% above January 1955, and 10% above the previous high set in July 1955.

Meanwhile, shipments are dragging along at a rate of 250,155 tons a month, only 11% above the comparable 1955 figure—and 15% below the best rate in recent years, the 293,532 tons shipped in April 1954. For year-by-year shipments as compiled by AISC, see chart above.

Because orders for fabricated structural steel are coming in 50% faster than tonnage is moving out of the fabricators' shops, backlog has soared to 2,407,609 tons. This is equivalent to nearly 10 months' production at the January rate.

The mills are scheduling about half the backlog (1,176,259 tons) for fabrication by May. But, to use this steel, fabricator output would have to average 294,000 tons per month. That rate has been achieved only once—for one month—in recent years.

These facts indicate strongly that the steel shortage will get worse before it gets better. And, it is bad now.

In parts of Georgia, for example, foundations for new buildings lie deserted, with no building trades workers in sight. The jobs have been halted. Contractors cannot get heavy structural shapes they need.

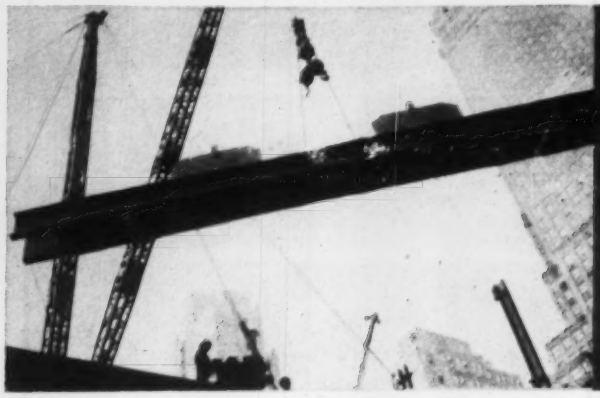
Near Washington, D. C., the Maryland State Roads Commission is building—with federal aid—a series of seven bridges to carry U. S. 1 over low terrain in the vicinity of the Anacostia River. One of the seven bridges already has been redesigned as a concrete structure because state highway officials cannot get the needed shapes in time to meet completion schedules.

In downtown Denver, Colo., construction of two highway bridges over the Platte River has been delayed six months. The reason is that after getting the substructures above water last fall, the contractor had to suspend work until this spring because he could not get delivery of heavy structural shapes until then.

These are not isolated incidents. With only slight variations, they are repeated daily in nearly every section of the nation. They are local situations that fit into a national pattern.

(Continued on page 22)

The Structural Steel Picture: *Shortages Are Serious*



- **Deliveries run up to a year, or more.**
- **Buildings and bridges are being delayed.**
- **Some projects are being redesigned to use other materials.**

Fabricators on the Spot

While producers in times of shortage are under pressure from so-called "mill customers", i.e., those who buy directly from the mills rather than from fabricators or warehouses, they are not on the spot with as many customers as are the fabricators. But the fabricators have a good record in the current shortage. They have tried hard, and at considerable cost, to anticipate and meet the demands of an incredibly fast-growing market.

Many are putting the finishing touches on expansion programs launched five years ago. A few are starting new expansions now even though most have excess capacity today. They aren't working at capacity because they cannot get the steel from the mills. This is true, strangely enough, of the captive fabricators as well as the independents.

Bethlehem Steel Co. and U. S. Steel are not only the biggest producers of structural steel but also the biggest fabricators. Yet Bethlehem does not give its fabricating division any priority in getting the needed blooms from the mill, nor does American Bridge Division of U. S. Steel get preferential treatment from that company.

One reason for this, of course, is that both Bethlehem and U. S. Steel are wary of doing anything that would give them a larger share of the fabricating market. Conscious of the Eisenhower Administration's vigorous anti-trust policies and embroiled in an anti-trust action—brought by an independent West Coast fabricator—they have carefully refrained from increasing the capacity of their units.

The independent fabricators, on the other hand, have been quick to add new plant and equipment. Probably one out of every five in the Chicago region had added to his manufacturing area by building plant additions or by converting former storage areas into fabricating facilities. Throughout the nation, fabricators either have just completed ambitious expansion programs or are revamping present facilities to increase efficiency and output.

Because of local conditions and widely varying demands for fabricated structural steel, the size of the fabricators' expansion programs runs a large gamut. In some sections, the increase in capacity has been a moderate 15% in the past five years. In another area, a large operator has doubled his capacity in the same period. Generally, the new capacity is about 40% to 50% above 1950-51 levels.

Unfortunately, the fabricators are not able to use all of this new capacity. Almost without exception, they could handle 20% or 30% more work than they do—if they could get steel from the mills.

The fabricators now are playing a major role in helping to get the steel to the construction jobs and they could do even more had they the opportunity. Others are helping, too.

Engineers Change Design

Architects and engineers are meeting the shortage in two ways. They are ordering steel well in advance of normal time in order to minimize delays at the job site. And, they are redesigning structures to use other materials.

Are engineers generally designing away from steel? The answer is a qualified yes. It is no secret that in some areas, Georgia for example, projects originally designed for steel have been switched to reinforced concrete. This has affected not only private work but public projects as well, such as state highway bridges.

A Connecticut high school, designed for steel, is being reconsidered now with a strong possibility that it will be built as a reinforced concrete structure. A large shopping center planned for Baltimore is undergoing design changes, and probably will use prestressed concrete instead of structural steel. And on the West Coast, a $21-million building complex for an aircraft manufacturer, originally planned as a steel job, now appears destined to be concrete.

Even though additional examples could be cited, it would be inaccurate to assume that the majority of architects and engineers are "designing away from steel." It would be more in line to say that under pressure of construction schedules — or owners' timetables — architects and engineers work with either the materials they have or can get within a reasonable time. If they are up against a tight schedule and cannot get steel in less than a year (which is true in some areas), they naturally turn to concrete.

In other cases, of course, designers can encourage long-range planning on the owners' part and bring the job to contract stage when steel will be available. This is more feasible on private projects than on public work.

But on public projects, some state highway departments and other construction agencies order steel long before bids are taken. They then resell the steel to the contractor who gets the award.

Contractors cannot do as much as others to straighten out the steel problem because the very nature of their operations limits activity to careful pur-

Demand Is Rising

- This year's record-breaking boom will put new pressure on producers.
- An expanded road program, new drive for schools and public works will push need for steel still higher.

Supply Will Improve

- Producers are expanding mill capacity.
- Fabricators are expanding.
- Bottlenecks are being broken.
- Engineers, contractors and owners are doing better planning.

chasing techniques or some reshuffling of the subcontractors' schedules to "work around" the missing steel.

If the quantity of steel needed on a job is relatively small, the contractor sometimes can get what he requires by canvassing warehouses and fabricators in his area.

"Shopping around" is not a major factor, however. It is merely one way in which a tight market is forced to be efficient in distribution. It points up, in that respect, a noteworthy fact about the current situation. Despite demand far outrunning supply, there have been no reports of a black market—or even a gray market. This contrasts with the early Korean War period when a gray market in steel was widespread. Strict allocation by the mills is credited with maintaining the morality of the market. The mills generally have been expert at allocating the steel that is provided to the construction market. But they do not have as good a record when it comes to giving the construction industry more steel to divide.

Famine Amidst Plenty

With fabricators, contractors and engineers working overtime to get steel where and when it's needed, only one group seems to be dragging its heels. With only one or two exceptions, the producers are the laggards.

To understand some of the underlying reasons for the seriousness of the supply situation, it is necessary to consider what steel producers are doing—and what they are not doing—about the structural steel shortage.

First of all, producers are vastly expanding basic steel capacity. Since the end of World War II, the capacity of the U. S. steel industry has been increased 40%. In 1946, basic steel capacity was 91,900,000 net ingot tons. This year it is 128,400,000 net ingot tons—and is still growing.

Some construction men deny any relationship between basic steel capacity and structural capacity. As a result, they say, the basic capacity figures are meaningless. However, producers and fabricators disagree with them. They argue that when the mills reach the semi-finishing stage, they have a choice of sending ingots to three types of mills: blooming mills, billet mills or slabbing units. Blooms are processed into heavy structural steel shapes, i.e. members which have one dimension of 3 in. or longer. Billets are used to make bars and rod, and slabs are used for sheet steel.

Between now and 1959, the steel producers expect to add another 15,000,000 tons of basic capacity. This is the mill theory of "more pie to divide" and is a substantial basis for the producers' belief that construction—and other major steel customers—will get all the steel they need in the next few years.

Conceding the validity of this argument, it still has its limitations. Construction can get more steel only from producers that turn out structurals. The American Iron & Steel Institute lists some 13 producers of heavy structural shapes. From a standpoint of tonnage, only six are important to construction: U. S. Steel, Bethlehem, Inland, National, Jones & Laughlin, and Kaiser. Breaking it down further, two producers—Bethlehem and U. S. Steel—account for about 80% of all heavy structural shapes produced in this country. Construction, then, looks to Bethlehem and U. S. Steel for any relief from the shortage. This underscores their expansion plans.

One of the few encouraging notes in the present situation is that Bethlehem is adding structural capacity. Within a few months, this producer will complete a 50% expansion of its Saucon Division, which produces wide-flange structural shapes. Monthly capacity of this division will jump from 140,000 tons to 210,000 tons, giving Bethlehem an annual capacity of 2,520,000 tons of wide-flange structurals.

Moreover, last week Bethlehem also took a big step that will offer indirect aid that might be substantial in the future. The company awarded an engineering and construction management contract to the Koppers Co. for a major portion of the producer's $200-million expansion program at Sparrows Point, Md. This expansion will add 2,000,000 tons of capacity a year to the mill, giving it an annual rating of 8,200,000 tons. With more ingots available, Bethlehem should be able to step up production of structurals.

This is significant also because one-eighth of Bethlehem's total steel capacity is devoted to heavy structural shapes.

The other major factor in the field is U. S. Steel. As the nation's largest producer of basic steel (rated capacity of 39,215,000 tons as of Jan. 1), and as one of the two biggest producers of structurals, the corporation could play a big part in determining how much structural steel the construction industry will get—and when. But U. S. Steel has not yet disclosed any plans to increase structural capacity.

The construction industry is also concerned with a basic question: Is construction getting its fair share of the basic steel available? There is good reason to believe it is not. AISI figures show that construction's share of the steel "pie" is getting smaller despite

the fact that demand is at a record level.

Producers, prodded with this criticism, cite some of their problems. One of the worst, according to the mills, is attempting to anticipate demand. All producers engage heavily in market research, consult frequently with major customers, watch a host of economic indexes to form an educated guess on how much steel they can expect to sell—and to whom.

At one of the larger steel companies, nearly a score of product managers assemble yearly to try to answer this question. For some of the product managers, the anwer is reasonably easy to determine. This is true primarily of industries in which the growth pattern is stable and where there are relatively few manufacturers involved so that their needs can be worked out as much as a year in advance—at least on an informal basis.

But, the steelmakers say they haven't found any real gage to measure demand for steel by the construction industry. As an example they cite 1955 when many forecasters underrated the size of the construction boom by a substantial margin.

The mills can spot big jobs coming up with some degree of accuracy and plan for them. District sales managers in some companies furnish the home office with weekly reports on large office buildings, major industrial plants or other large structures that are proposed or are in the early design stages.

In order to handle these thousands of reports on specific projects (with estimated tonnage indicated on each report), there must be a cut-off. One firm, for example, generally doesn't get a report on a job through a district manager's advance sheet unless the project calls for 1,000 tons or more. Estimates at the home office could fall short of actual needs easily if there was a run of smaller jobs.

Anxious to tell their side of the story, the mills complain that their troubles do not end with allocation of a certain percentage of the basic steel to structurals. They explain that even after they have scheduled what they think is a fair share of basic steel to become blooms—and thence structurals—they have a further problem of division because not all structural steel goes to the construction industry.

Three other major customers for structural are railroads, shipbuilders and warehouses. The bulk of structural steel shipped to warehouses probably goes to construction, but no one has figures on the actual percentage. But shipbuilders and railroads compete directly with construction for heavy structural shapes.

Freight-car building programs are erratic. Railroads may be almost out of the market for a year or two, then suddenly return with a bushel of orders.

The railroads were in the market for structural last year, and will be again this year, because of an artificial stimulus—the federal government last year set a cut-off date after which railroads could not get rapid amortization for tax purposes. To beat the deadline, railroads sent a small flood of orders to the steel mills at a time when the market already was unable to meet demand.

With the construction industry and the railroads subject to rapid ups and downs, the mills look to fabricators and warehouses to supply some degree of stability. But that safety device fails in a time of critical shortage. This is because inventories are reduced to a minimum. Fabricators and warehouses cannot supply the steel needed to meet a local situation in which a construction project needs only a small quantity of steel—but needs it desperately. That is one reason some jobs are being shut down.

Cars vs. Highways

If the construction industry can't get enough steel for today's markets, what will happen when an expanded federal-aid highway program is approved? The answer is that the steel industry may have to decide whether it wants to supply steel for roads or for automobiles.

Some of the present structural steel shortage is traced back to the record volume of automobiles produced in 1955. Structural steel does not go into cars. But basic steel does. And when the automobile industry called for more steel, the producers turned to that market of higher profit. Some steel spokesmen say privately that more ingots will go to the blooming mills if automobile production shows a real drop. But it hasn't been the case so far. When some carmakers canceled orders for sheet steel in January, the steel mills turned only a small part of this basic capacity to structurals. They found a ready market for the "extra" sheet steel in the booming appliance business.

One comment that the producers have on the expanded road program is worth noting. The program will start slowly, then build up after the first two or three years. That means that the full effects will not be felt immediately.

But, despite the expansion of basic steel and a limited expansion in structural capacity, the construction industry—even without the road program—can expect the shortage to last at least another nine months—maybe longer.

Construction's Share of Steel Supply

Total Mill Shipments of Carbon Steel Direct to . . .

	1953		1954		1955	
Fabricators and Construction	Thous. Tons	% of Total	Thous. Tons	% of Total	Thous. Tons	% of Total
Projects, Total	**9,810**	**13.8**	**8,563**	**15.1**	**9,598**	**12.8**
Heavy structural shapes	2,601	3.7	2,626	4.6	2,579	3.4
Plates	1,754	2.5	1,574	2.8	1,716	2.3
Steel piling	283	0.4	319	0.6	309	0.4
Concrete reinforcing bars	947	1.3	897	1.6	1,038	1.4
All other	4,225	5.9	3,147	5.6	3,956	5.3
Warehouses and Distributors*						
Total	**14,254**	**20.0**	**11,456**	**20.3**	**14,995**	**20.0**
Heavy structural shapes	1,069	1.5	904	1.6	956	1.3
Plates	1,127	1.6	676	1.2	961	1.3
Steel piling	27	#	21	#	41	#
Concrete reinforcing bars	690	1.0	660	1.2	884	1.2
All other	11,341	15.9	9,195	16.3	12,153	16.2
All Domestic Users						
Total	**71,192**	**100.0**	**56,523**	**100.0**	**74,968**	**100.0**
Heavy structural shapes	4,725	6.6	4,213	7.5	4,444	5.9
Plates	7,024	9.9	4,973	8.8	6,220	8.3
Steel piling	321	0.5	346	0.6	357	0.5
Concrete reinforcing bars	1,775	2.5	1,715	3.0	2,093	2.8
All other	57,347	80.6	45,276	80.1	61,854	82.5

Shipments shown in net tons.
*Include those who also do fabricating. A large part of this tonnage is used for other than construction purposes.
#less than 0.1%.

Highway officials meet in Chicago to discuss . . .

Electronics: A New Tool for Engineers

Machines that can "think" and do much highly technical—but routine engineering work will in the next year or two provide the answer to a greatly expanded highway program without a great increase in human engineering forces.

That prospect emerged last week from the first national conference ever held to discuss means of streamlining highway engineering. With the American Association of State Highway Officials as sponsor, and the Illinois Division of Highways as hosts, the meeting this week pulled together at Chicago a surprisingly large crowd of 125 professionals, representing, among others, 37 state highway departments. And in a series of hastily-gathered, but well organized panel discussions, they gave and gathered information on electronic, photogrammetric and related developments that are wholly practical for highway application.

The two-day national meeting in Chicago grew out of plans for a four-day regional meeting to be held by the North-eastern states in Albany, N. Y., March 26-29. So widespread was the interest generated by plans for the Albany meeting that AASHO and the Bureau of Public Roads decided to hold the conference at Chicago's Morrison Hotel, March 6 and 7.

The new-era character of the conference showed up in the choice of chairman—Chief Deputy Commissioner G. M. Foster of Michigan, who is head of the AASHO Committee on use of electronic equipment.

In the very first session, H. L. Plummer of Wisconsin told what his department had done in three years to double—and more than double—the volume of highway work handled by the same staff of engineers. (ENR Jan. 19, p. 28). Then this panel and others went into expanded uses of electronic equipment, starting with the two-way radio.

• **Computers at work**—Three types of computers were demonstrated by their manufacturers. Two computers were at work in the hotel on earthwork and survey computations, and tour parties of about fifty each were taken to see a bigger computer at the International Business Machines Center.

Although the two-day program was divided into twice-daily technical sessions, they were conducted in an informal atmosphere.

One panel explained how an electronic digital computer manipulates data through its four parts: input, computation and transfer section, memory cell, and output device. Another group reported experience with high-speed calculation of earthwork quantities and survey computations.

Telegraph company representatives told the conference how simple and inexpensive are installed systems for direct teletype communication—or, even better, facsimile transmission to send field notebook pages or drawings in without chance of error.

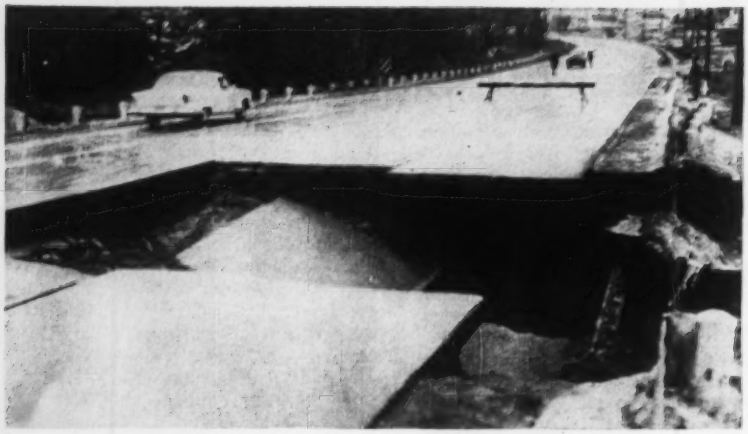
• **Time saved, but how much?**—But the engineers were interested chiefly in how much engineering time and effort could be saved by using the electronic computers. And here is what they learned.

According to the manufacturers of the equipment: In cut-and-fill computations for roadbuilding, for example, it was claimed that one operator with an electronic computer can do the work of 45 mathematicians with mechanical desk calculators. These reduced computation costs will result in more accurate estimates of job costs and work schedules, the highway engineers were told, and similar economies can be realized in other types of construction engineering design such as stress analysis. By feeding the engineering survey data of the cross sections for both the original ground surface and the finished roadway into these machines they can compute the volume of cut—and fill, summarizing the volume as they go along, all at an average rate of about 4½ minutes per 100 ft of highway. In one demonstration it was pointed out that an electrical computer would need only about 12 sec. for the actual solution of the area of a cross section. Savings claimed for this method over the conventional method of using CCS section, road profile and planimeters, run as high as 30 to 1 in elapsed time, while a savings in cost is equal to or greater than 15 to 1.

In another comparison about 40 min time is required to compute the volume of cut and fill between two stations, using the conventional methods. By comparison the same results can be obtained with an electric computer in 4½ to 5 min. This particular machine, according to its demonstrator, costs around $39,000, but it would do the work of about 10 engineers computing cross sections, etc. Also it is estimated that the average salaries paid three of these engineers would pay for the computing machine over a reasonable length of time with the savings in the salaries of the other seven engineers representing a substantial amount. Such a machine rents for about $1,000 a month.

Although most of the demonstrations were centered on earthwork computations, the machines are equally capable of handling other functions of highway design. These include traverse computation, traffic analysis, cost accounting, curve and structure design, stock accounting, etc.

"IT'S EASY," explains John Gaffney of the Burroughs Corp. as he gives T. F. Morf, Illinois State Highway Department Research and Planning Engineer, a brief lesson in electronic computer operation. Onlookers are (l. to r.): C. W. Kitchens, Sr., Corps of Engineers, Ft. Belvoir, Va.; R. W. McGowan, North Carolina State Highway Dept.; and R. J. Roy, Bureau of Public Roads, Raleigh, N. C.



Minor Floods Hit Two Eastern States

Swollen Allegheny River flows last week flooded several New York and Western Pennsylvania communities but receded before posing a major threat to the Ohio Valley.

Hardest hit were the communities of Warren, Pa., about 110 mi north of Pittsburgh, and Salamanca, N. Y., 35 mi northeast of Warren. Eight feet of water swirled through the 15,000-person Pennsylvania city causing an estimated $1-million damage. High flow (4.4 ft above flood stage) was recorded at 7 P.M. on Thursday and by Friday morning water level had dropped 1 ft. Flows at Salamanca were 4.5 ft above flood stage.

The same rains and melting snow that swelled the Allegheny also caused high waters on the Susquehanna River which runs a southerly course through east-central New York and Pennsylvania. Aside from several power failures and washed out roads such as pictured above, little damage was reported.

Along the Ohio River, running southwesterly from Pittsburgh where it is formed by the confluence of the Allegheny and Monongahela Rivers, crests were recorded between one and three feet above flood stage as far as Cincinnati.

A flood-control dam, sited just above Warren, has been authorized for several years. The Corps of Engineers has completed another dam and reservoir on the Allegheny at Tionesta, 34 mi below Warren.

Weight effect to be re-examined as . . .

AASHO Plans Third Road Test

Dirt will begin to fly by July of this year on a new $12-million road-test project to be built near Ottawa, Ill.—but first reports on results of tests won't start becoming available for a couple of years, and it may be five years before the reports are made final.

Sponsored by the American Association of State Highway Officials, the test will be the third major effort in recent years to determine the effect of vehicle weights on roadways and bridge sections. Basic reason for the new test is to help determine the cost increment for heavy trucks. In fact, the tax measure (Boggs Bill) now before Congress calls for a definitive study and a report on the perplexing question as to whether highway construction costs are in fact higher because the roads are designed for heavy trucks.

Speakers before the 375 delegates to the annual meeting at Chicago of the Mississippi Valley Conference of State Highway Departments outlined this schedule for the new test road:

- Initial grading contracts will be awarded in June of this year.
- Two construction seasons will be required to build the eight miles of divided pavement (of portland cement and asphaltic concrete), eight test bridges and installation of various testing equipment.
- Two years of actual testing, and another year for post-testing, analysis and writing the final report.

Fred Burggraf, director of the Highway Research Board, said that more than a million axle loads will be applied to each test section. Loads will vary from 10,000 to 30,000 lb for single axle to 20,000 to 50,000 for tandem axles.

• **Test management**—The AASHO-sponsored project will be conducted under direction of the Highway Research Board, and the Illinois Division of Highways—now preparing construction plans and specifications—will negotiate for right of way, and award contracts. The $12-million bill for the test will be met by 47 of the 48 state highway departments, the U.S. Bureau of Public Roads, the Department of Defense and by the automotive, petroleum and tire segments of the highway transportation industry.

A 32-member group will constitute a national advisory committee for the tests, made up of 12 representatives of the highway departments; 4 members of AASHO, three from engineering colleges, and one each from the BPR, the Army's Transportation Corps., Automobile Manufacturers' Association petroleum industry, tire industry, PCA, the Asphalt Institute, National Highway Users' Conference, American Trucking Assn., Ford Motor Co., Truck Trailer Manufacturers' Association, Automotive Safety Foundation and the American Automobile Association. The group will hold its first meeting in Washington this week.

• **Promoting highways**—A promotional program to sell the need for better highways at the taxpayer level in Indiana generated a lot of interest among the highway leaders assembled at Chicago—some even predicted the movement may spread to other states.

Sponsored by an organization incorporated as "Indiana Highways for Survival", the program has taken for its target the 1957 legislature and has adopted a program calling for educating taxpayers to the point where they will demand adequate road legislation.

The directors of the program represent all segments of the construction industry, as well as businessmen, and the organization—a non-profit affair—has an operating budget of $75,000.

Port Bill Passes Final Test

A special session of the Maryland General Assembly has cleared the way for developing the state's port facilities by approving the long-debated port authority bill.

The bill originally was passed in the regular legislative session that closed March 1 (ENR March 8, p. 25). But this short session is constitutionally restricted and legal experts thought the bill might prove invalid without re-enactment.

The bill provides for financing the five-man port agency by increasing the state tax on corporate incomes from 4.5% to 5% starting July 1. The tax boost is expected to bring in an additional $2 million a year.

Turnpike Trestle

Precast, prestressed beams to be used in Connecticut

Contract has been awarded for construction of a 792-ft trestle along Connecticut's new turnpike. Engineers responsible for its design had to ponder some unusual field conditions before arriving at their choice of prestressed, precast stringers to carry a cast-in-place concrete deck.

The substructure will consist of 15 bents, made up of cast-in-place concrete pile caps and partially encased H-beam piles. The bents are spaced 49 ft 6 in. c-c.

The trestle will carry the new superhighway across a water supply reservoir—Lake Saltonstall—near New Haven, Conn. Not only was it important that the reservoir be maintained in serviceable operation during the summer, but the nearby location of the water intake plus a thick silt and peat deposit on the lake's bottom, made it imperative that there be little turbulence during trestle erection.

Final choice of bridge structure was governed by these considerations:

- End bearing piles of about 60 ft could be used with little lateral support.
- Erection must be done from the bridge deck rather than from floating equipment to minimize danger of contamination.
- Water company requirements and their time schedule made winter erection desirable. This made an existing steel delivery schedule a handicap.
- Minimum of maintenance of the structure to reduce future contamination.
- Economy, the prestressed, precast stringers that constitute the bridge's main component will be pretensioned I-shaped members. They have been designed to carry a deck traveller for sequence erection prior to placing the deck slab. After being placed they will be braced at right angles by deep, U-shaped concrete channels, also precast, and formed to be seated between the flanges and against the web of the stringer. Later, channels will be reinforced and filled with concrete.

Lastly, the cast-in-place deck slab will be concreted. Shear lock between the beams and slab will be provided by dowels and keying of the top flange of the I-sections with 1½-in.-deep mortised areas.

Prestressing of stringers will be done with ⅞-in., 7-strand cables. Initial prestress will be 175,000 psi. Specifications call for a 4,000-psi compressive strength for concrete at time of prestressing, with 28-day strength of 6,000 psi.

The project is a venture of the engineering firm of Seelye, Stevenson, Value & Knecht of New York City, and Westcott & Mapes, New Haven, Conn. T. F. Collier is project engineer.

General contractor for the portion of the turnpike that includes the trestle is M. A. Gammino Construction Co., Providence, R. I.

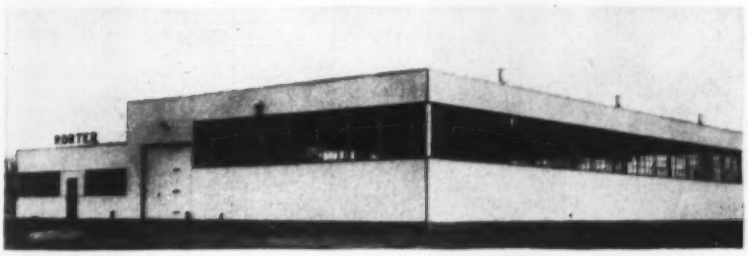
Private Atom Power

Latest plant planned may be the first in operation

The latest entry in the privately-financed nuclear power field, a General Electric-Pacific Gas & Electric Co. venture, also may be the first to go into commercial operation—about 1957. The $3.5-million, 5,000-kw plant will be located near San Francisco and will employ a reactor now being built by GE as a pilot model for a 180,000-kw station planned for the Chicago area.

Chief significance of this project is that power from a boiling water reactor designed for dual-cycle operation will be generated for the first time. Several of the AEC-sponsored atomic energy power plants will go into operation earlier, but none employ the dual-cycle boiling water method of steam generation.

Other private license projects are as follows: Rural Cooperative Power Assn. is building a 22,000-kw closed-cycle boiling water plant at Elk River, Minn. for 1959 operation; Consolidated Edison Co. of N. Y. plans a 150,000-kw pressurized water nuclear station at Buchanan, N. Y., for 1960 completion; the above-mentioned 180,000-kw plant will be built by the Nuclear Power Group, Inc., headed by Commonwealth Edison, in time for 1960 power generation; and the Pennsylvania Power & Light Co. plans an aqueous homogeneous reactor of 150,000-kw capacity for 1962.



Factory Gets Walls Made of Plastic

Insulated sandwich panels combine plastic-and-glass wall finish—inside and out—in an 8,480-sq-ft one-story factory and office building in Grand Rapids, Mich., for Burke E. Porter Machinery Co. Opaque white surfaces of resin-laminated glass-fiber cloth are bonded to ¼-in. asbestos-cement sheets, which enclose a non-hygroscopic core of expanded polystyrene-resin insulation. The panels require no painting or finishing.

The building was completed at a total cost of $5.20 per sq ft, including the in-place panel cost of $2.20 per sq ft of wall.

The lower 8 ft of wall consists of 4 x 8-ft panels hung vertically on the steel frame. The top 4 ft is made up of horizontally hung panels. Between the two is a band of windows. Joints between panels are sealed with plastic splines. At the bottom of each panel, a groove engages a steel spline in the base plate. Tar-base mastic seals this joint.

The panels are made by Haskelite Mfg. Corp., Grand Rapids, Mich.

High Cost of Roads

Maryland acts to prevent right-of-way speculation

The Maryland legislature has passed a new condemnation bill designed to stop speculation prior to state acquisition of rights-of-way for highways.

The bill was introduced as a result of a recent speculation scandal—and a number of indictments—involving a State Roads Commission right-of-way engineer and several Washington developers.

Under the new law, the Roads Commission can freeze land values for one year after filing center-line plats with the circuit court clerk in the county involved. After establishing the plats, the commission must deposit funds with the circuit court—and this money can be used by the property owner affected without prejudicing the case either way. The value set by the commission on such rights-of-way can be amended by a special board of property review and later—if necessary—by the circuit court.

The new bill also permits the commission to take possession of the property after filing the plats. Until now the commission has been forced to buy rights-of-way as it moved along on a highway project, and it has had no way to freeze property values. This made speculation a simple matter, especially if developers were tipped off as to the location of new highways.

The law is patterned after a Pennsylvania statute, but is not as harsh toward property owners. The Maryland agency must acquire the land within one year, but in Pennsylvania there is no such time restriction.

Virginia Tunnel

Traffic survey indicates the project is feasible

A favorable feasibility report has increased chances for an early start on a second Elizabeth River tunnel, between Norfolk and Portsmouth, Va.

A preliminary report, issued by DeLeuw, Cather & Co., Chicago traffic engineers, indicates that the second tunnel is feasible from both a traffic and financial standpoint. And results of the study already have spurred the Elizabeth River Tunnel Commission to take steps toward constructing and financing the project.

The tunnel commission has:

• Asked three consulting engineering firms to submit preliminary proposals on the project by March 14. The firms include Parsons, Brinckerhoff, Hall & Macdonald, New York; J. E. Greiner & Co., Baltimore, and Singstad & Baillie, New York—all three already concerned in tunnel construction in Baltimore or Norfolk. The engineers selected will recommend routing and supervise construction in addition to designing the structure and preparing final plans and specifications.

• Appointed the National Bank of Commerce of Norfolk as trustee for the revenue bond issue needed for construction of the tube. The bank also will handle refinancing of the present bridge-tunnel in conjunction with the second project.

The tunnel is planned for a site about 1½ mi downstream from the present one. On the Norfolk side, traffic will be channeled into a new street plan. This will provide speedier travel to the northern part of the city as well as to Norfolk Naval Base and Hampton Roads bridge-tunnel. In Portsmouth, the tunnel probably will be linked to a new street planned to furnish fast transit to the western part of the city.

The new tube—which reportedly could be started in eight months and completed in three years—is expected to cost less than the first $23-million facility. Revenues from the present bridge-tunnel for the year ending Jan. 31 reached a record high of $2.4 million. And the tunnel portion is handling about 18,000 vehicles daily, close to capacity.

New Approach to Golden Gate Bridge

A new four-mile freeway approach to Golden Gate Bridge is slated to be officially dedicated March 20.

The $6.2-million project extends from the north end of the bridge to a point beyond the north end of Waldo grade. Work involved conversion of a four-lane undivided highway into a six-lane divided highway, construction of a new $1.8-million tunnel, and modernization of another.

Newest of the twin 1,000-ft tunnels (background) was opened last fall to carry two-way traffic while the old one was being tiled and illuminated. After the reconditioned tunnel is put back into operation this month it will handle southbound cars and the new one will take care of north-bound traffic.

Hurricane Program

North Carolina plan for protection starts to move

North Carolina's program for hurricane rehabilitation and protection shifted into high gear this month. After months of preparation and studies, these four developments occurred within days of each other:

- The U. S. House of Representatives voted unanimously to add $5.4 million to the federal disaster relief fund earmarked for hurricane clean-up work in North Carolina. Senate concurrence appears assured.
- The state released a report of a study it began last fall which sets forth a comprehensive state-wide storm protection program.
- A full-time State Director of Hurricane Rehabilitation and Protection was named to implement recommendations made in this study.
- The State Highway Department will go ahead with test construction of asphalt groins along a coastal bank to protect adjacent to U. S. 158.

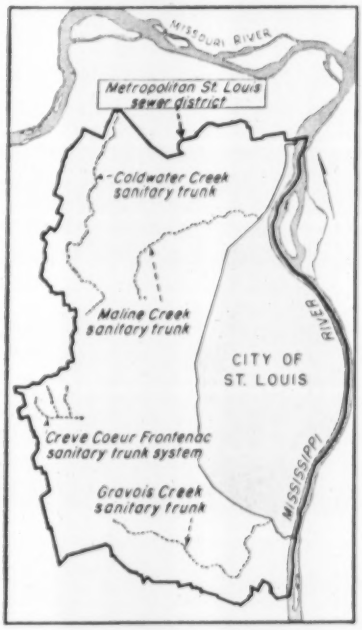
Gov. Luther Hodges had requested $20 million in federal funds for hurricane rehabilitation, pointing out that the state had received negligible funds compared to the emergency relief granted the New England states.

Harry Brown of Atlanta, Ga., veteran civil defense administrator named to the newly-created hurricane post, has the job of coordinating the expected federal grant with state and local funds. The report emphasizes that localities will bear the brunt of financing work needed and suggests the establishment of special development districts possessing borrowing authority. Three avenues for providing supplementary financial aid to these districts were advanced in the report: direct state contributions, state-established low-interest revolving loan fund, and state guarantee of local bond issues to aid in securing reasonable interest rates.

Local districts are envisaged carrying out drainage, beach erosion, sand dune preservation and diking.

One startling figure presented in the report was that North Carolina has suffered $319 million worth of damage from four hurricanes during the 1954-55 seasons.

W. H. Rogers, chief engineer of the State Highway Department, outlined the groin-building program. Five or six groins spaced along a half-mile stretch of highway—each will reach from the low tide mark to the dune line. They will be 8 ft wide at their bases. Cost of the experimental program is estimated at $25,000.



St. Louis Sewer Plan

Four major projects to be started by sewer district

Four major projects are to be started this year by the newly formed Metropolitan St. Louis Sewer District, which on Jan. 1 assumed responsibility for an area including the city and thickly populated St. Louis County.

First of four projects to total $10 million will be a 6-mi trunk sewer in the Maline Creek area, in the northern part of the county. Voters there approved a $1.7-million bond issue Feb. 7 by a 6-1 margin. Maline Creek had been described as "the most serious public health problem" in the area. Construction should start by May 1.

Three other projects to start this year, all of which must be authorized at bond issue elections, include:

- Coldwater Creek, about 8 mi of trunk sewer and a treatment plant for sewage before discharge into the Missouri River above the major St. Louis Chain of Rocks waterworks on the Mississippi. Estimated cost is about $3.5 million.
- Gravois Creek Subdistrict, about 10 mi of trunk sewer in the southern part of the county. Estimated cost, about $3 million.
- Creve Coeur-Frontenac Subdistrict, a trunk sewer and laterals to serve suburban areas west of St. Louis, to cost about $2.5 million.

The over-all plan of the Metropolitan Sewer District follows roughly a 1950 report of the Bi-State Agency for Missouri and Illinois. It involves service for 39,936 city acres and 75,000 acres in the county, with combined population of more than 1,200,000 persons.

Much of the existing St. Louis system is old and inadequate, the metropolitan approach was much needed. St. Louis County had 15 municipally-owned sewer systems, 24 operated by sewer districts, and another 75 in real estate subdivisions. The county had 49 publicly-operated treatment plants and 151 operated by industries. Half of the plants were said to be inadequate.

Corps Moves Fast

Engineers ready to speed work on New England dams

Only five weeks will elapse between Congressional appropriation of $1,250,000 for five New England flood-control reservoirs and advertisement of first contracts. Congress approved a supplemental request for fiscal 1956 money two weeks ago and the Corps of Engineers is set to advertise five contracts late this month or early in April.

Awards will be made for the following work.

Otter Brook, N. H.—$100,000 worth of highway relocation work for this earthfill dam will be let in May, with final completion expected by 1959.

Ball Mountain, Vt.—Stripping of abutments and construction of portions of access road, estimated at slightly less than $300,000, will proceed in April. Some land remains to be acquired for this project which is planned for 1960 operation.

Buffumville, Mass.—An April start on $100,000 worth of highway relocation is anticipated. Completion is expected by 1958.

Barre Falls, Mass.—First contract will include outlet works on the dam, access roads and utilities buildings totaling approximately $300,000, beginning in May. It is hoped to finish the dam and reservoir by 1958.

Bear Creek, Pa.—$300,000 will be spent on dam outlet works starting in April. This $18-million project won't be completed until 1961.

The Corps believes the construction speed-up made possible by the supplemental appropriations will save from 4 to 18 months construction time. Production of final plans and specifications for these projects will be divided among various district offices to assure orderly prosecution of subsequent work.

An extra $150,000 was provided in the appropriation for studies of a flood-control works at Woonsocket, R. I.

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provide 100% electrical flexibility

For this distinguished, 12-story office building, the architects chose a reinforced concrete frame with shallow beam and flat slab R/C Duct Floors which provide a complete network of underfloor electrical outlets for power, light, telephone, and intercom systems—at a new low cost. Outlets can be connected to convenient risers in a matter of minutes without ripping up or drilling through floors and ducts.

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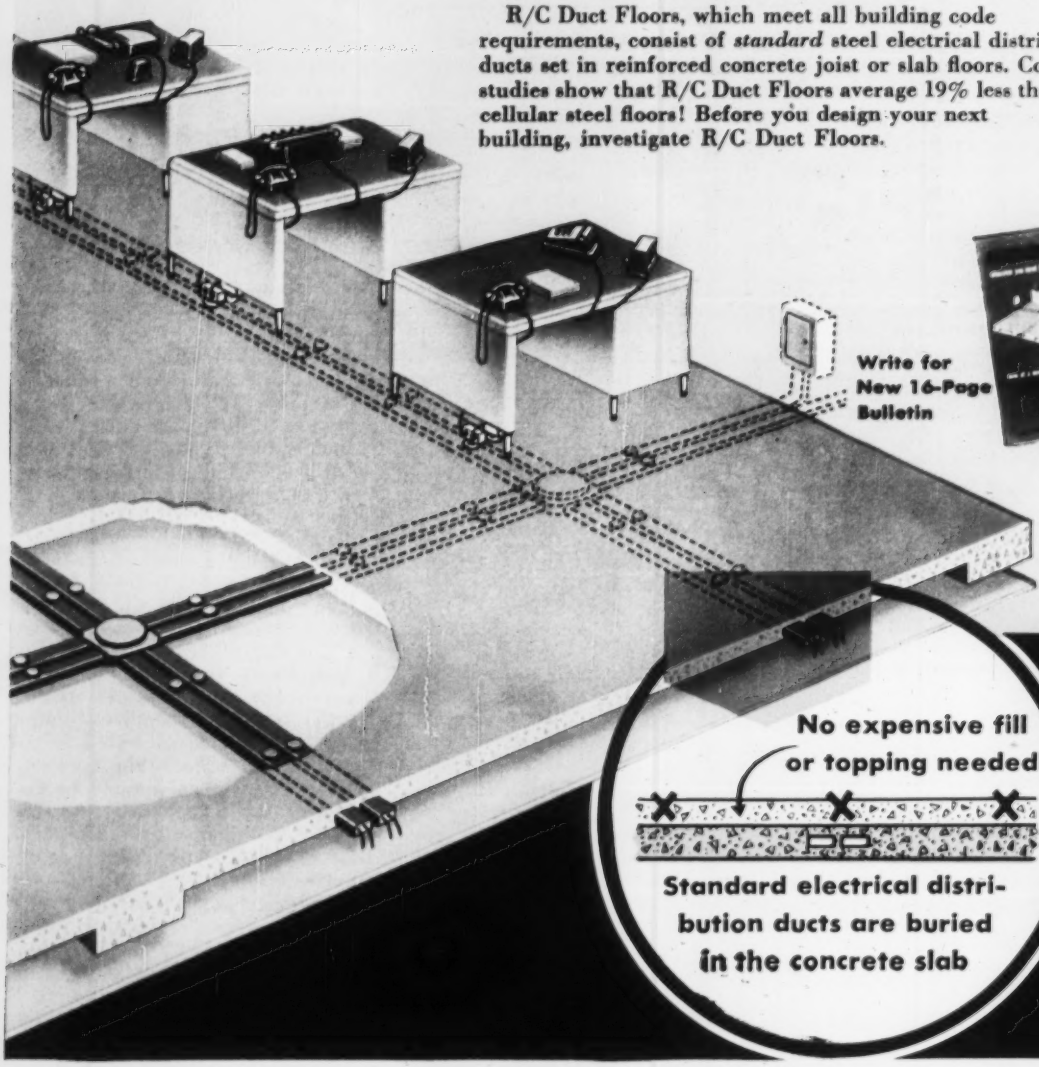

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Mechanical Engineers:
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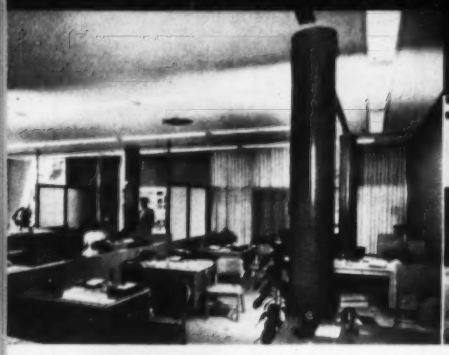
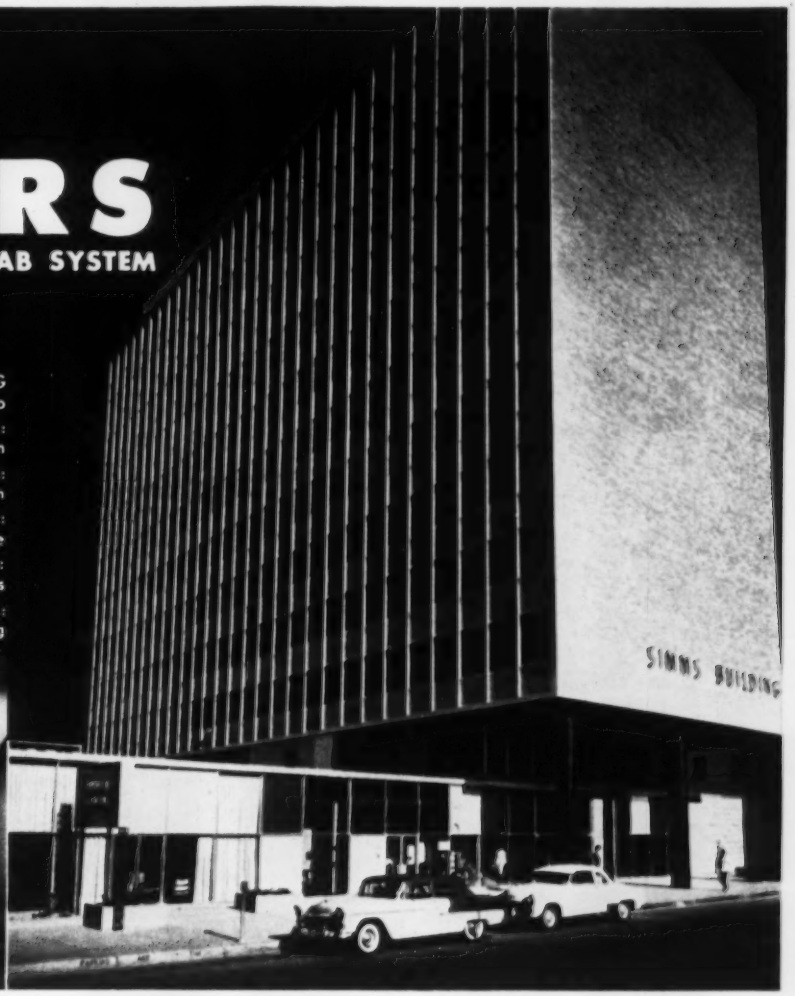
Electrical Engineer:
M. V. McIntyre
Structural Engineer:
E. M. Hicks
General Contractors:
Lembke, Clough, and King





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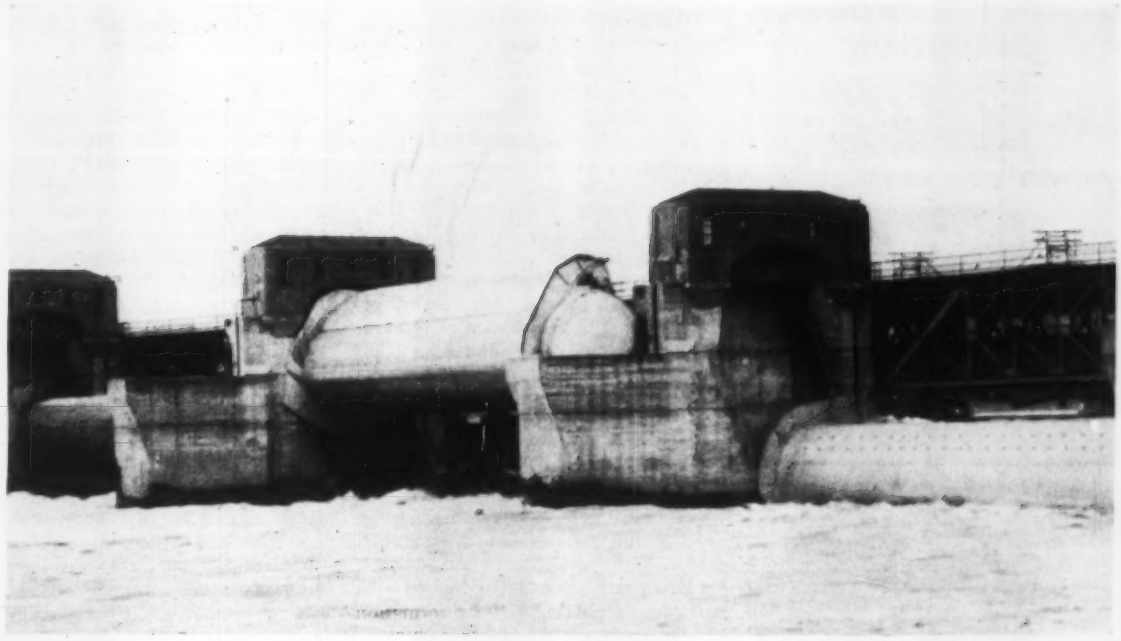
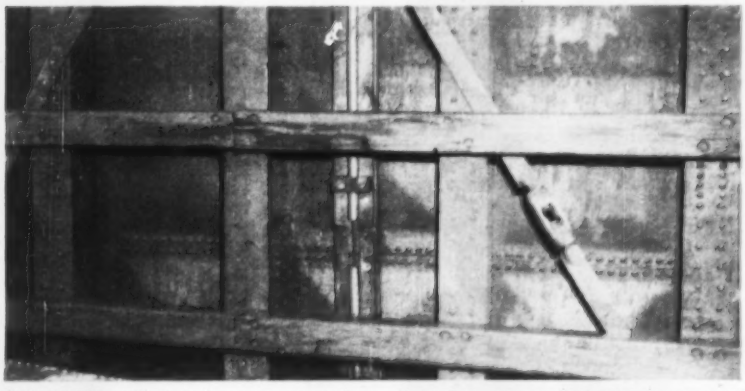


Mississippi River Dam No. 15 had its steel roller and lock gates used in tests to prove . . .

Where Cathodic Protection Works

CATHODIC PROTECTION ANODES—Each rod is protected and insulated by strips of timber. The rod at the left is stainless steel. The other two are structural steel.



GRAPHITE ANODE (center) mounted on oak timbers on one leaf of the upper gate of the main lock chamber at Dam No. 15.

F. W. Shanks &
J. L. Rohwedder
Supervisory Materials Engineers
Rock Island District
U. S. Corps of Engineers

Corrosion of immersed steel structures that can be made accessible for painting only by expensive unwatering procedures often can be mitigated more economically by cathodic protection than by other means. That is the principal conclusion reached to date as a result of extensive studies of cathodic protection that still are in progress at Lock and Dam No. 15 on the Mississippi River at Rock Island, Ill., and at a few other similar structures. These studies are being made by the Rock Island District, North Central Division, of the Corps of Engineers.

This finding applies chiefly to the miter gates and sector gates of navigation locks. The studies indicate further that the exterior and interior surfaces of tainter and roller gates subject to fresh water exposure generally can be protected more economically with paint coatings than by cathodic methods.

If facilities for cathodic protection are included in the design of sector gates or miter gates, cost of that protection can be reduced materially.

At Dam No. 15, experimental installations of cathodic protection were made on miter gates, which have 48-

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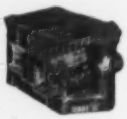

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000 sq ft of surface area, one-third of which is subject to immersion, and on roller gates, which have an underwater, exterior area of 104,000 sq ft. Ice and debris floating in the river greatly complicated the problem of installing cathodic protection on the roller gates. Anodes installed on the lock gates had to be protected against injury by tows moving through the locks.

Each of the four leaves of the lock gates at Dam No. 15 is electrically grounded through its operating machinery to a ground plate located beneath the concrete at each of the four gate anchors. Similarly, the roller gates, their operating machinery and the service bridge are grounded by a cable leading to a ground plate at one end of the dam. The river water in which the gates are submerged has a specific resistance of about 3,000 ohms per cubic centimeter. Solids dissolved in it are principally calcium bicarbonate.

• **Experimental installations**—In the process of obtaining the information for this investigation, 25 field cathodic protection installations and one fairly large laboratory experiment were made or are under way. A number of the initial trial installations made use of remote anodes while all of those of a more recent date employ close anodes. (Remote anodes are considered to be located more than 20 ft from, while close anodes are considered to be located within 3 ft of, the surfaces to be protected.) The remote locations of anodes for lock gates included: floor of lock chamber, 50 ft from gate; along lock wall in miter gate recess; along river bank outside of lock chamber; and along centerline of lock chamber.

For dam gates, remote anode locations were 300 ft upstream and 50 ft upstream on the bottom of the river.

Upstream and downstream surfaces of lock and dam gates and the interior surfaces of roller and compartmented tainter gates have been included in the test areas to be protected cathodically. A few of the test surfaces were blast cleaned and left uncoated prior to application of protective current, while others were protected by coatings to a variable degree, ranging from an intact coating affording relatively complete protection to an old deteriorated coating offering relatively 40 percent protection.

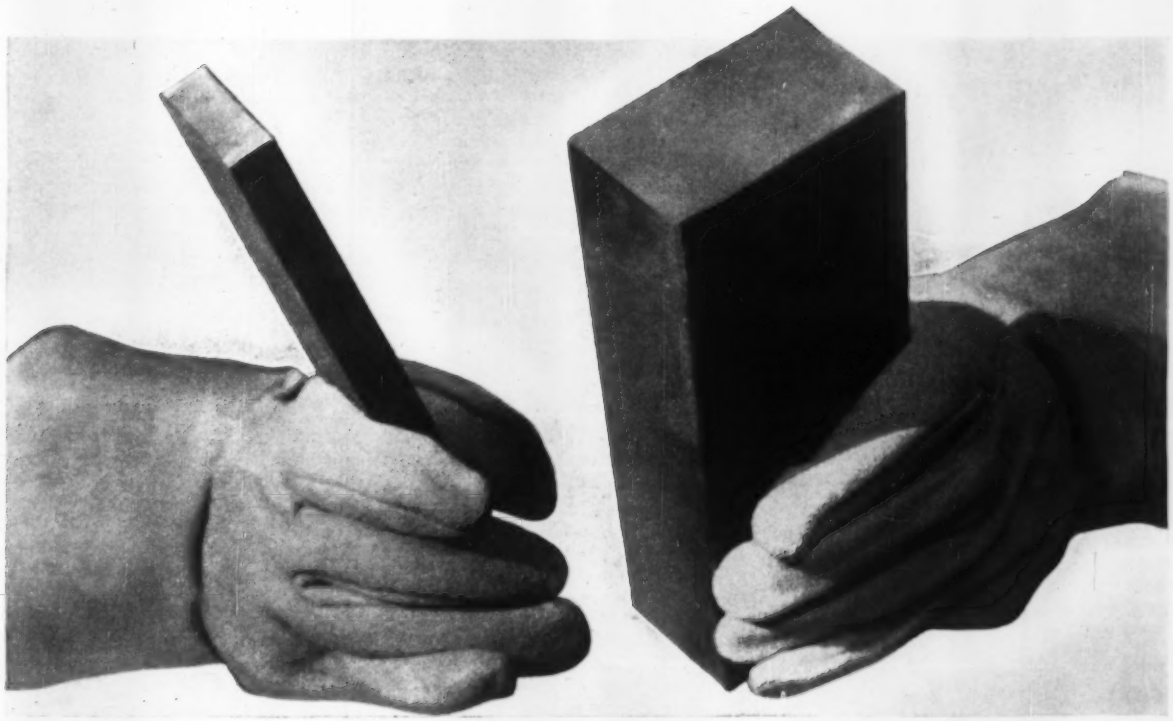
• **Anode location**—The factors considered in selecting anode location were: cost of initial installations; ease of anode replacement; current distribution on the cathode (surface to be protected) probably anode life; insulation of anode from contact with cathode; shielding effects, and straying of cathodic currents. Many of the installations were designed for the purpose of determining how rugged the anodes, anode supports, fittings, and connections needed to be to avoid excessive maintenance.

The remote locations offered the most economy in installation of anodes, but it was found that current straying elsewhere than to the intended surface was greater than could be accepted on the basis of either anode dissipation or current consumption, or both. When the possibility of stray currents damaging the reinforced concrete was considered, there was even more reason to abandon the idea of locating anodes remotely from the cathode. Consequently, on all of the experimental installations now operating, the anodes are mounted directly on the roller, tainter, or miter gate being protected. They are supported on wood timbers which, in addition to their support function, insulate the anode from the cathode.

One disadvantage of these supports is the relatively high cost of installation. Also the wood timbers on roller and tainter gates will eventually be destroyed by the action of ice and debris. The amount of current straying from close anode installation is not known definitely, but it is estimated from tests made that it is less than 15 percent of the total current supplied to the anodes. In some cases it probably is not more than 2 percent.

• **Anode material**—Low carbon steel, stainless steel, graphite, and magnesium have been used in the various trial installations. The magnesium was used, of course, as a galvanic type anode, generating its own current. The chief disadvantage of magnesium in water of rather high resistivity is the low current developed which in turn requires the anodes to be closely spaced over the area to be protected and not far distant from it. Consequently, labor and material costs for installation of magnesium anodes tend to be high.

Stainless steel rods, ¾-in. diameter, have performed fairly well as anodes for rectified current, but severe pitting can be expected at any point where the high polish of the rod has been scarred, as by welding or by handling, and at points where oxygen deficiency exists. Low-carbon steel rods have the advantage of low initial cost, ease of welding and shaping, and high mechanical strength until weakened by dissipation of the metal, but the rate of expenditure of 20 pounds per ampere-year makes frequent replacement necessary. Also, the metal loss from the anode is not uniform, which means that mechanically weak points



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The lighter weight, reduced thickness of Lukens "T-1" steel, in comparison to heavier, thicker plates of ordinary carbon steel, makes possible substantial over-all savings in material and fabrication costs for equipment builders. This new all-purpose steel—a unique, low-carbon, quenched and tempered alloy plate steel—has a yield strength three times greater than ordinary carbon steel. It can cut costs by reducing weight and still increase payload and efficiency.

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Lukens "T-1" steel is the most recent addition to Lukens' complete line of carbon, alloy and clad steels. Its unusual combination of properties suit it especially to application in pressure vessels, bridges, shipbuilding, construction machinery and general industrial equipment. On problems of design, selection, application and fabricating techniques, Lukens offers full technical assistance. If you would like further information on Lukens "T-1" steel, write for Bulletin 765 on its properties, characteristics and applications. Address: Manager, Marketing Service, 774 Lukens Building, Lukens Steel Company, Coatesville, Pa.

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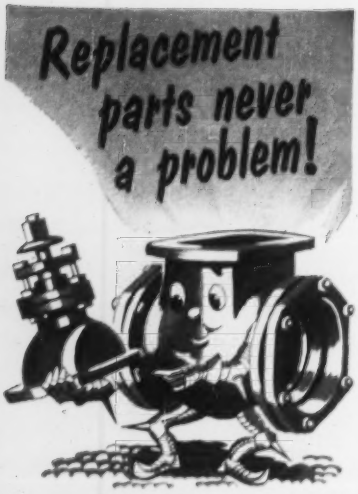

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Other reasons are:

- Taper seats provide positive, self-wedging action, assuring no-leak closing.
- Only 3 moving parts.
- Even new employees without special training can service and maintain any Eddy Valve.
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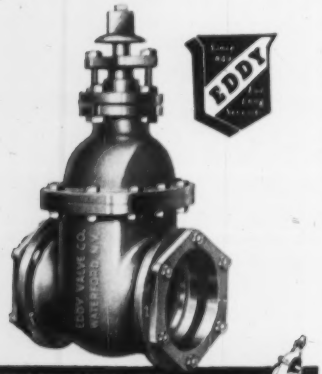

EDDY VALVE COMPANY
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occur long before the theoretical life has been realized.

Graphite anodes at the present time, appear to be more economical than others tried. Based on experience to date, it appears that a 2¾ in. diameter graphite anode will last at least 5 years before replacement is required. Graphite anodes up to 6 in. in diameter are commercially available. The current density on the graphite anodes in use is approximately 0.3 amperes a square foot.

Another prototype installation will be made this year to evaluate the performance of Duriron as anode material. Reportedly, this steel, containing about 14 percent silicon, withstands electrolytic corrosion well.

• **Anode dimensions**—In the investigative work published in the November, 1950, issue of "Corrosion" by E. R. Shepard and H. J. Graeser on "Design of Anode Systems for Cathodic Protection of Underground and Water Submerged Metallic Structures", design data are given concerning the effect of diameter and length of anodes on the circuit resistance of a cathodic installation. This information contributed materially to the preliminary design of experimental installations. In the instant investigation the anode length required for satisfactory current distribution generally resulted in a circuit resistance of approximately 2 ohms for installations on mitre gates and from ¾ to 1.2 ohms for installations on tainter and roller gates. The anode diameter selected for various installations was governed by either the size commercially available or the size handled economically.

• **Fittings and accessories**—The bolts, brackets, timbers, insulation materials for underwater electrical connections, conduit, and cable are the items considered to be the most vulnerable to mechanical damage. Considerable progress has been made in determining how damage can be minimized by proper design, but mechanical difficulties continue to plague the trial installations, although at less frequent intervals for the most recent designs. The pressing need for economical installations is frequently an overriding factor in these design considerations.

• **Current density**—A current density of 2 milliamperes a square foot on the surfaces to be protected has been found sufficient to maintain protection of bare steel submerged in relatively quiet water. In order to establish protection initially within a reasonable period of time, 4 or 5 milliamperes per square foot is usually applied during the first week or two of operation of an installation. It is quite difficult to obtain a protective potential on the top 6 in. of waterline areas, but it is believed that some protection is obtained from the current that reaches this area intermittently.

• **Current distribution**—Anodes attached to gates in a fairly symmetrical manner will furnish current to all parts of one face of a gate quite satisfactorily. Even anodes located in a compartment closed on three sides but open on the side facing the river will furnish current to an adjacent compartment.

Leading edges of structural members facing the anodes, rivet heads, and similar projects will receive higher current densities and tend to shield areas more distant from the anodes, but generally sufficient current eventually gets to all areas for fairly satisfactory protection. A paint film, even though it may be imperfect and only ½ mil thick, is effective for improving current distribution.

• **Polarization tests**—The protection obtained in the cathodic installations was determined primarily by means of structure-to-water potential tests employing a copper sulphate half cell. A potential change of a minus 0.2 volts from the pre-protection potential of the structure was found to be sufficient to stop corrosion. Visual inspection for the presence of carbonate deposits and in some cases the absence of corrosion verified the date from half cell measurements. Dilute muriatic acid was used to detect carbonate deposits not readily visible.

• **Damage to paint coatings**—Cathodic currents, the magnitude of which have been quite carefully controlled, have not been found to appreciably damage vinyl or phenolic coatings. In fact, there is some evidence that the performance of the vinyl coatings is improved when the area they are protecting is also under cathodic protection. However, on the basis of limited laboratory test data and reports by others, there is no question that excessive current densities will damage these coatings.

Cathodic protection is another tool for the use of engineers in their battle with the underground and underwater corrosion of metal. The use of this tool on corrosion problems requires careful engineering analysis to obtain maximum economy in design, minimize survey costs, and avoid damage to structures or utilities. The corrosion engineer must have an open mind and have available realistic cost data to make sound decisions as to what method or combination of methods of corrosion control will serve the customer best.

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Beth-Cu-Loy culvert sheets conform to the rigid standards of the AASHO specifications, and are made by Bethlehem for fabricators of drainage pipe. If you would like further information about Beth-Cu-Loy Sheets, or the names of nearby concerns who make them into drainage materials, just get in touch with the Bethlehem district sales office nearest you.

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Available with a choice of either Timken-Detroit Axle connecting groups, or brackets to accept other approved chassis hook-up parts . . . plus all these additional advantages with the Timken® lightweight tandem:

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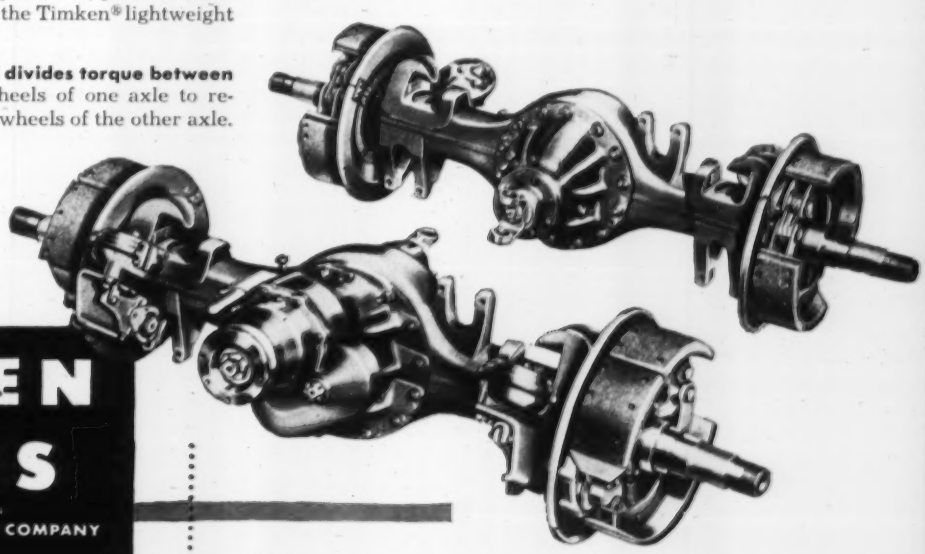
*based on 75,000 highway miles a year.



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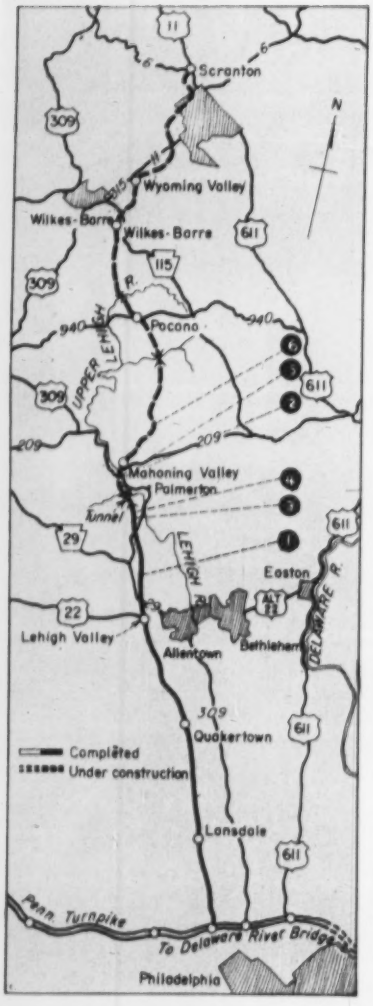
Northeast Penn Turnpike Extension

With 48 easy miles completed, what remains is a big excavating, bridge building and mining operation

FROM EASY GOING in gently rolling farmland of eastern Pa., the route jumps . . .

Off the Fairway and . . .



Having completed about 48 mi of four-lane tollroad with comparative ease, contractors building the Northeast Extension of the Pennsylvania Turnpike have driven head-on into the Pocono Mountains and some of the most rugged roadbuilding terrain in the East.

The rough 62 mi of road that remain on the route to Scranton are being assaulted by fleets of the heaviest equipment made, armies of bridge builders and—most unusual—platoons of strip and drift miners.

The completed section stretches through gently rolling country from near Philadelphia to a temporary cutoff midway between the Lehigh Valley and Mahoning Valley interchanges. But in the first five miles north of the temporary interchange, the route slices through a 90-ft cut in slate rock, jumps the town of Emerald on a high-level, three-bay bridge, drives through 4,700 ft of hardrock tunnel, then spans a deep creek valley on a higher five-bay structure.

• **No room for roads**—One of the first Pocono obstacles that confronted planners was a mountain ridge that is broken only where the Lehigh River cuts through it near Palmerton, Pa. This gap already carries US Route 309, which forms the spout through which pours traffic funneled from five heavily traveled routes, as well as railroad rights of way, so routing of the turnpike extension through the narrow gap was considered not feasible. Selection of the tunnel as the best alternative proved to be merely the start of a parade of knotty route location decisions.

From this tunnel north, no less than eight major bridge structures are under construction. They range in length from about 400 ft to more than 1,500 ft. Minor structures occur at less than one-mi intervals, and range in size from pipe culverts to a reinforced concrete arch culvert 9½-ft x 14-ft in cross section and 703 ft in length. Into the latter went 2,460 cu yd of concrete and 172,000 lb. of steel.

One 738-ft bridge, with substructure already completed, will cross a gorge where the stream bed is 190 ft below deck level. The longest structure, located at the northern terminus of the extension, is the 1,627-ft Clark Summit bridge that crosses the Lackawanna River at a height of 139 ft above the stream.

• **Big job for big equipment**—Cutting through strip and drift mining country, where big excavating equipment is a common sight, the toll road is being pushed by contractors using several units of locally situated strip-mining rigs—even walking draglines—and bringing in some outsized pieces of their own. Six-yard shovels dot the route, and 50-ton trucks are considered standard equipment. And they are none too large for the jobs—cuts range up to 1,000,000 cu yd and fills are placed to 90 ft in height.

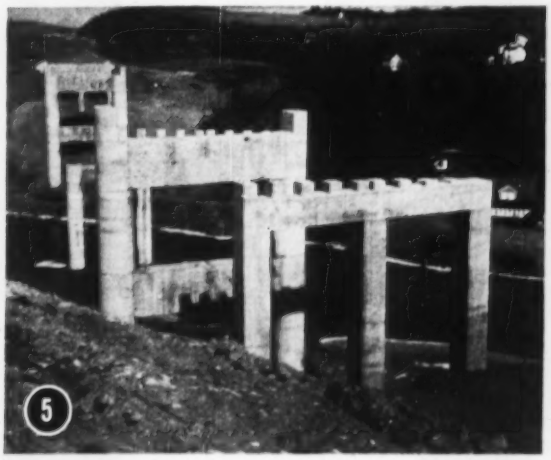
Several job-developed rigs have been put into service, also, to cope with the rugged going. Modified scrapers, with built up sides, are capable of carrying many times their design pay-loads,

INTO CLIFF-SCALING ACROBATICS, with mammoth equipment playing stellar roles. Four lanes will hug Lehigh River gap.

. . Into the Rough

FOUR TONS TO THE BITE—This 3½-cu-yd shovel digs slate and shale in 90-ft cut within sight of completed portion.

EMERALD VIADUCT jumps the lower portion of a town. It is 465 ft long and 77 ft high at center of main span.



POHOPOCO CREEK—From the northern approach to the 1,487-ft lower Lehigh Crossing, the route hops 920 ft across the Pohopoco.

ONE OF FIVE ARCH STRUCTURES—This 18-ft reinforced concrete arch, 330 ft long, took 1,400 cu yd of concrete and 85,000 lb of steel.

Grousers: available in regular, semi, or flat types; all standard widths

WHY

Kensington track

LASTS SO LONG

There are two reasons why these tracks give you longer service, even under severest working conditions: (1) KENSINGTON'S new, improved design, and (2) superior, wear-resisting alloyed manganese steel.

New Design. Rigidity and near-perfect alignment are made possible by one-piece rail design and special heat-treated alloy pins pressed tightly in place under high pressure. Anti-shear lugs on grouser plate fit snugly over tie bar of link to eliminate loose plates, elongated bolt holes, twisting, weaving, and side-sway . . . the most common causes of bolt loosening and track trouble. Grousers are heavied-up at all critical points to better resist bending and breaking.

Yet, despite all these improvements, KENSINGTON *Track Assemblies fit all standard, popular make crawler tractors.*

Steel with Stamina. Special, hard, tough, KENSINGTON-developed alloyed manganese steels actually fight back against wear! They constantly develop extra surface hardness when exposed to friction, abrasion, and impact.

KENSINGTON tracks come from the factory ready-assembled, easy to install.

Discover for yourself how much KENSINGTON tracks will lower your maintenance costs and improve your operating efficiency. Coupon will bring details.

Kensington
STEEL COMPANY

SUBSIDIARY OF POOR & CO., CHICAGO

KENSINGTON STEEL CO.
Dept. E, 505 Kensington Ave., Chicago 28, Ill.

● Please send information on crawler tracks for tractor described below. I understand I will be under no obligation.

Make of tractor_____

Model_____ No. tracks per belt_____

Width of grouser_____

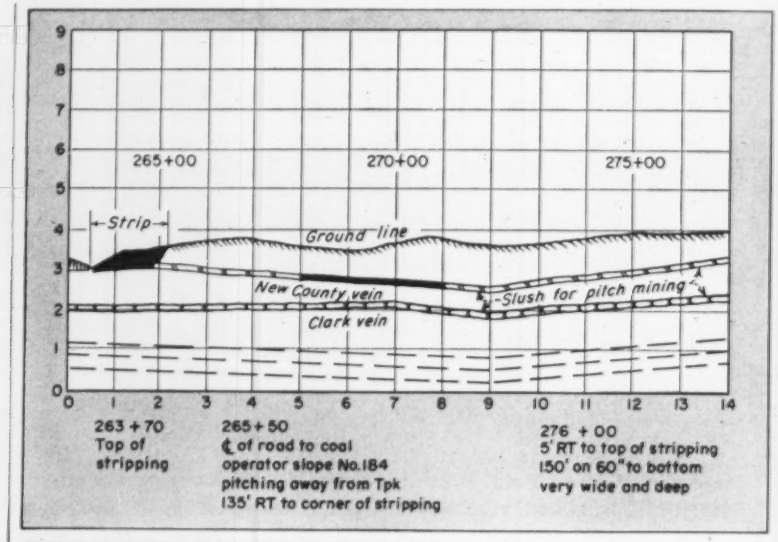
NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE_____

STATE_____


265+00
270+00
275+00
Strip
Ground line
New County vein
Slush for pitch mining
Clark vein
263 + 70
Top of stripping
265 + 50
℄ of road to coal operator slope No.184 pitching away from Tpk 135' RT to corner of stripping
276 + 00
5' RT to top of stripping 150' on 60° to bottom very wide and deep

TYPICAL MINE SLUSHING DATA SHEET shows depth of veins, portions to be slushed and those to be stripped.

tractor-mounted drill rigs are proving their worth as a result of their power and maneuverability in the rough, shale-studded right of way. Dual-drum pavers, working tandem, pour two 12-ft lanes simultaneously, the first placing a 7-in-thick base layer, and the second casting a 3-in top layer over welded wire fabric. When the following paver reaches the lead machine, it helps place base course concrete.

Blast holes six inches in dia are drilled in shale, slate and abrasive sandstone by manufactured and field developed rigs. Holes up to 50 ft deep on a 16-ft grid are drilled, and eight days of drilling are required for a 25,000-cu-yd shot.

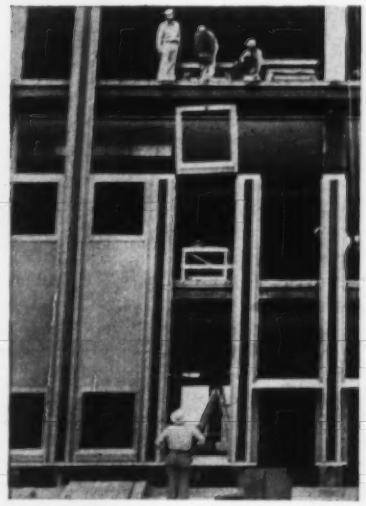
● **A mining operation, too**—At the northern (Scranton) end of the extension, some 15 mi of right of way is undercut by a maze of worked out and abandoned mine drifts, in some places as many as four worked out veins occurring at various levels below the proposed route. In order to assure a firm subbase, most of these mines require packing with hydraulically placed sand or silt. In some places, where drifts are closest to the surface, it has been found expedient to strip the cover until the soil layer above the drift is of sufficient thickness to bear the highway load safely with slushed packing.

Slushing, a common practice in mining regions, entails drill rigs that sink 7½-in holes to receive driven casings of 6 in dia, 10 x 10 x 5-ft portable hopper-funnels to receive and deliver slushing material to the casings, and two 2½-in. firehoses mounted on a truck tailboard for sluicing sand and silt into the draft at about 100 psi. From 150 to 200 gal of water per ton of sand or silt are used.

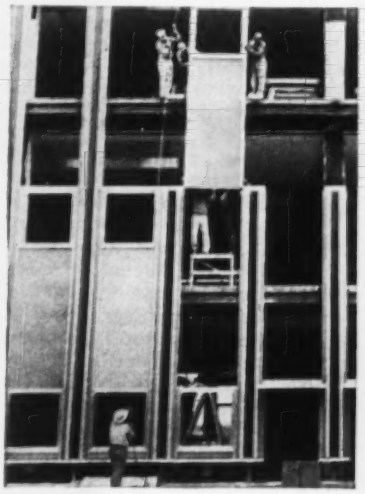
The casing is driven to lowest drift, and trucks deposit the sand and silt in the portable hopper-funnel. The box is placed about six ft from the casing to allow operational space during retraction phases of the process. The high-pressure jets carry the material down into the drift until it is packed, and the casing is withdrawn to the next higher drift where the operation is repeated. Occasionally, the casing becomes so firmly implanted at the lower level that extrication becomes impractical, so the bottom of the casing is blown and the operation continues. In places where there is danger of erosion by infiltrating water in the packed area, concrete plugs are poured to seal off the flow.

● **Strip-mining operations**—Just outside the city of Scranton, the right of way runs into a mountainous pile of spoil from a strip-mining operation. At last report, the contractor on this section could not say how much of the loosely packed, poor soil would have to be removed, or how deep he would have to go to reach suitable subbase.

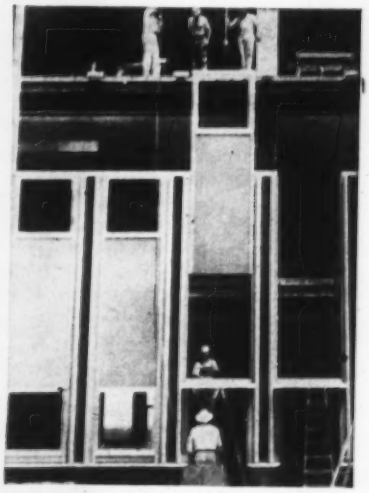
In a project such as this one, every contractor has special decisions to make with equipment movement, excavation and material handling. It is difficult, in some cases, to figure out how they ever managed to get a dragline to a place one-third the way down into a steep canyon, or a scraper unit half-way up a sheer mountainside. One contractor, a leading strip mine operator, dismantled a 6-yd track-mounted dipper rig and moved it to be reassembled for work on a short cut section.



START of tower enclosure . . .



ALUMINUM PANEL is lowered . . .



SLIDING into place between mullions.

Houston's tallest welded building—construction averaged . . .

Better Than a Story a Month

G. Allen Heidbreder
Architect
Houston, Texas

Twenty-one months of construction time for a $16-million skyscraper with 825,000 sq ft of floor area is unusually short. Yet, that is what the time from the first shovel of earth to completion will be for Houston's new 24-story Bank of the Southwest Building—tallest welded structure in the city—when tenants begin to move in next month.

• **Tight scheduling**—To begin with, the general contractor was exacting in scheduling delivery of materials. There was very little stockpiling on the site. Almost every item was unloaded from a truck, moved immediately to the approximate location of usage, and erected within a short time. Wherever possible, materials were loaded on frats and moved about with mobile lifts. This applied particularly to masonry units and sack materials. Horizontal movement of concrete was by mechanized buggies.

Architectural and engineering designs went far in helping achieve speedy construction. In addition to credit for man, some also is due the weather. Extremely favorable con-

When a welded frame building has more useable space...

Has far simpler connections...

Yet uses less steel...

WHY don't you design all buildings for welded construction

Ask
THE LINCOLN ELECTRIC COMPANY
Cleveland 17, Ohio

Pioneer in welded structural design ...for lower cost

. . . Better than a story a month

ditions have prevailed to date with only six working days lost due to inclement weather.

• **Repetitive design**—The steel frame is welded. Framing was kept as simple and regular as possible, the only variations being about the elevator shafts. All structural members are fire-protected with plaster.

A typical bay of the building is 25 x 24 ft 4 in. These dimensions were based on the desirability of certain office layouts and the economical subdivision of the site.

Wide-flange columns (14-in.) were used throughout, cover plates being needed for only a few in the lower floors. All columns were kept free of concrete basement walls so that excavation and forming for the most part could progress without the usual delay of awaiting the arrival of structural steel columns.

• **Cellular deck**—Above the first floor decking is cellular steel. It proved well worth-while from its first use as staging to the final intended use as a flexible electrical distribution system. An additional benefit was a reduction in construction insurance rates. A 2½-in. lightweight concrete fill was placed over the cellular decking.

While construction was fast, more time than usual was spent in the design of the building, and in particular, in the design of its exterior. The governing factors in the design came from considerations of the building's functions. Present banking facilities occupy nine floors. The new plan will provide a 50% increase in floor area and switch from a vertical to a horizontal-type operation. The new main banking floor will occupy a square block of 63,000 sq. ft, located on the second floor, with only a few departments on other floors. These other departments, with space to spare, were easily laid out on the first three floors of the building.

The solution seemed to resolve itself naturally into a large low base and a narrow tower. The large banking room required longer spans than other spaces; so the tower was located off center to avoid expensive heavy trusses over this area. Red granite was chosen as the exterior material for the base, and aluminum facing for the tower.

• **Novel aluminum facing**—The architects's requirements for the aluminum facing were that (1) there be no open calked joints; (2) expansion joints be tight and waterproof; (3) contrasting values be provided from bright aluminum to dark or gray; (4) a sculptural effect be incorporated in the design; (5) the construction be a combination of extrusions and flat sheets structurally independent of backup materials; (6) shapes and sizes be simple and repeated many times; and (7) windows be of a type that can be washed from the inside without the use of ladders.

All these requirements were met. The resulting facing consists of panels about 5 ft wide by 13 ft long. These are one-story sections with one window set in each panel. No aluminum facing was installed until the plaster fireproofing, major air conditioning ductwork, and the rough masonry walls about elevator shafts, stair towers and mechanical spaces were completed. This left only the 4-in. perlite wall as the last major structural operation to be finished after the aluminum was erected.

Materials on the job were chosen for durability of use during construction as well as after erection. Almost all work performed was of a permanent nature, since very little temporary construction was needed for erection purposes. Steel sheetpiling used in the foundation will remain in place, only the temporary shoring being removed. Concrete formwork was limited to the interior of basement walls, basement and first floor slabs, and floor well openings.

Architect for the aluminum-clad skyscraper is Kenneth Franzheim. Structural engineer is Ward Butterwick. The general contractor is the W. S. Bellows Construction Corp. The author was job captain for the architect.

In addition, H. E. Bovay was mechanical engineer. R. F. Taylor acted as mechanical consultant, and W. E. Simpson as foundation consultant.

Chicago to Let Contracts On $10 Million in Schools

As part of its already-approved $50-million building program, Chicago's Board of Education hopes to let contracts by the end of this year for construction of six new schools. Total cost of the six is estimated at $10 million.

Architectural design work has not yet started, but the board expects to take early action on this phase of the program.

Three of the new schools, slated to cost about $3 million each, will be high schools. The other three will be elementary schools. One of the elementary schools will cost about $1.2 million. The other two, much smaller, will cost about $175,000 each.

8 Reasons Why UNI-FORM Panels are the most widely used Prefabricated Form in the Industry

VERSATILITY

Uni-Form Panels will form straight, irregular, curved, battered walls . . . slabs, beams, columns, piers—everything from small house foundations to massive concrete structures.

COMPLETE — READY TO USE

The Uni-Form Panel System is complete, ready to use when it reaches the job. Eliminates field fabrication. Result: FASTER JOB STARTS.

FAST ERECTION

Simple assembly of easy to handle panels increases productivity of labor. Form more contact area per man hour with Uni-Form Panels.

AUTOMATIC ACCURACY

Assembly of Panels with Uni-Form Ties furnished for any wall thickness insures automatically accurate forming. Tie positively locks and spreads panels. No measuring . . . no guesswork.

LUMBER SAVINGS

You use less lumber in Uni-Forming. Steel-framed panels erect into a tight, rigid form requiring minimum alignment and bracing on 1 side only—regardless of height. Saves labor too.

FASTER STRIPPING

Less alignment and bracing lumber . . . fewer parts to remove means faster stripping, lower costs.

LONG LIFE

Rugged steel frame designed for fast pouring, cradles and protects plywood edges . . . permits maximum re-usage of plywood (actually 50 times or more) before replacement is necessary. Minimum panel maintenance required . . . lower material costs.

EXPERT ENGINEERING SERVICE

Universal's engineering staff and field engineers provide competent, specialized assistance, backed by over 40 years of experience in concrete forming.

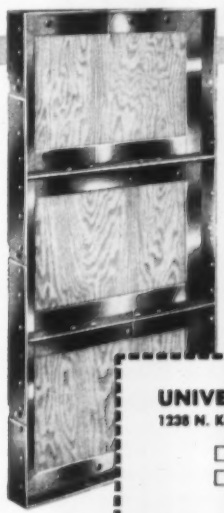
Branch Offices and Warehouses at: Los Angeles • San Leandro, Calif. • Houston, Texas • Cleveland, Ohio • Baltimore, Md. • Atlanta, Ga.

3 SIMPLE STEPS FOR ASSEMBLY

1. Insert Tie loop in Panel tie hole.

2. Tie Key locks Uni-Form Tie to Panel.

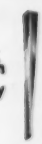
3. Tie loop receives adjacent Panel. Insertion of Tie Key completes tieing, locking and spreading operation.



3 BASIC ELEMENTS

UNI-FORM PANEL . . . Heavy duty — steel-framed, plywood faced.

UNI-FORM TIE . . . High strength, easy break-back.



UNI-FORM TIE KEY . . . Wedge shaped for fast, easy insertion and removal. Reusable.

UNIVERSAL FORM CLAMP CO.
1238 N. Kostner Avenue • Chicago, Illinois

☐ Send me complete details on UNI-FORM Panel System.
☐ SHOW ME! I am sending plans under separate cover.

Name_____

Firm_____

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special foundation services

You are invited to take advantage of the extensive experience and services available at INTRUSION-PREPAKT, INC., for the solution of your foundation or concrete structural problems. PREPAKT engineers are available to analyze your project and to suggest a fresh approach that may save dollars and days. The field construction group has a reputation for meeting completion dates and cost targets. Investigate the many advantages of INTRUSION-PREPAKT methods and materials.

COFFERDAM SEALS

INTRUSION-PREPAKT method simplifies underwater placement, produces positive seal without after-grouting. Superior quality PREPAKT concrete does not shrink on setting, provides a tight structural bond to existing foundation, and assures complete embedment of reinforcement and piling for a solid monolithic structure.

BEARING AND CUT-OFF PILES

Mixed-in-Place and Cast-in-Place piles are made in place with *no damaging vibration or ground heaving*. Versatile technique solves many difficult foundation problems: underpinning, shoring, cut-offs, cofferdams, support piling and soil stabilization. Competitive cost-wise with other pile methods.

FOUNDATION AND SOIL STABILIZATION

INTRUSION grout with high penetrability can be used to stabilize weak or permeable areas, fill voids caused by settlement or stream scour, seal porous foundation material and place grouted cut-offs in sands or gravels. Method is economical and simplifies placement in normally inaccessible locations.

STRUCTURAL CONCRETE REPAIRS

Low-shrinkage PREPAKT concrete has an exceptionally strong bond to existing concrete, making it ideal for rehabilitation, strengthening or enlargement of deteriorated concrete or masonry structures. Any structure still standing can be restored or strengthened, usually without taking it out of service.

Write for new 8-page technical bulletin on "Special Foundation Services" . . . or see it in *Sweets' Architectural and Industrial Construction Files.*

Prepakt maintains a complete field construction organization plus an engineering service, and functions as prime or subcontractor. For further information, write: Intrusion-Prepakt, Inc., Room 779-I Union Commerce Building, Cleveland.

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CONTRACTORS PREPAKT® ENGINEERS

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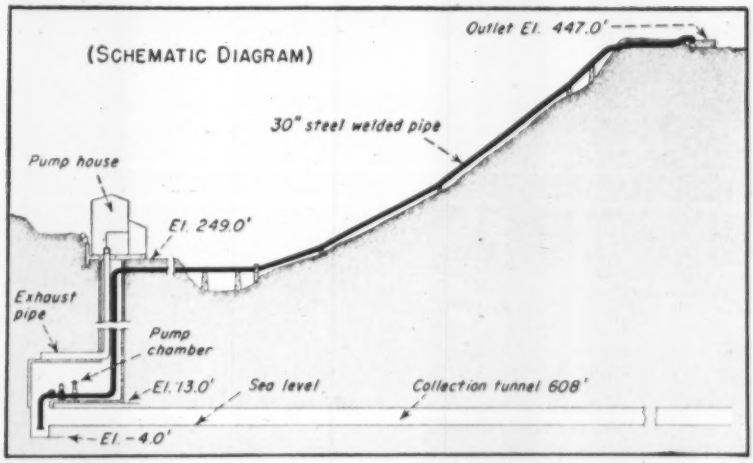
In this tunnel, water was welcome—



A Maui-type well, it is now . . .

Skimming Fresh Water Off Salt

Fresh groundwater floats on salt water under Oahu, just as it does under other relatively small islands, in Hawaii or elsewhere in the oceans. And in Hawaii, a horizontal water collection tunnel has been developed to skim off this fresh water without unduly depressing it. This collection tunnel is called a Maui type well, for the Hawaiian island of Maui where it originated.

Such a well has just been completed to develop an additional 15 mgd for a 10,000-acre sugar plantation on the northwest shore of Oahu. It is a 608-ft horizontal collection tunnel drilled at sea level from a vertical shaft. And the groundwater conditions under which it had to be drilled would have been just about unbearable in a tunnel for any purpose other than water collection.

This Maui well was completed for the Waialua Agricultural Co., Ltd., which produces some 65,000 tons of sugar a year on Oahu and needs a ton of water for every pound of sugar. The company's civil engineer, Joseph Matson, Jr., who has worked in the islands since 1930, describes the tunneling operation:

"Imagine drilling a hole into the tunnel face . . . pulling out to change drills or rod lengths, and having a hose turned into your face! Yes, the water would squirt right out of the drill hole! Then try and fill that hole with dynamite and keep it in place till you could get a dozen other similar holes loaded, connections made and get back to the surface before setting off the blast! Toward the end it took three men to push the empty mine car back into the tunnel against the flow of 34 cu ft of water per sec. The track had to be elevated on stilts above the tunnel floor. Yes—we had water!"

Constructing the skimming tunnel was truly tunneling in water. It is a 9-ft wide by 7-ft high section cut at sea level and entirely below groundwater in porous volcanic rock with uneven strata and occasional cinder pockets. The unlined bore was pushed out from a 250-ft deep vertical shaft dug from ground level to sea level.

Digging went through interspersed layers of cinders, volcanic ash, lava "boulders", hard blue rock and soft porous rock in a helter-skelter arrangement mixed up by faults from earthquakes and beds of weathered material. Substantial lining of the shaft was necessary; a reinforced concrete lining of rigid frame design was used.

Shaft lining proceeded from the top as the shaft deepened. Excavation was never allowed to get more than 28 ft below the lining. Each 12-ft increment of concrete lining was supported by indentations into the sides where solid ledges were found. Inside shaft dimensions are 9x11 ft.

Within the shaft had to be placed a 30-in. dia water pipeline and a 36-in. permanent ventilation pipe for the pump chamber below.

At the bottom of the shaft a pump room was excavated 32 ft by 40 ft and 18 ft high, with floor elevation 13 ft above sea level or 2.5 ft above the normal water table level. The roof and inside walls of this chamber were concreted before excavation went down to sea level. Then a sump for the pump suction line was dug before work on the skimming tunnel started. Two permanent pumps were installed, and later a third pump, giving a total capacity during construction of nearly 22 mgd.

Ocean-island groundwater geology is fairly well understood. The island is sort of a sponge where ocean salt water can seep in sideways, and fresh rainwater can percolate down from the top. The fresh water body assumes the shape of a lens, increasing in thickness with distance inland.

For every foot above sea level that the fresh water table is encountered, there is nearly 40 ft of fresh water below sea level. Thus, if the water table is found at 5 ft above sea level, there would be nearly 200 ft of fresh water below sea level. This being the case, the underlying salt ocean water rises at a rate 40 times the amount the fresh water table is dropped above sea level. Many of the original vertical type wells have gone "bad" because of this. The Maui type well, never getting below sea level, skims off fresh water with no possible chance of ever getting salty.

SHLAGRO stock welded STEEL TRUSSES
Lengths from 30'–0 to 120'–0
CAT. #100
BELGIAN
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SHLAGRO stock welded wide flange LONGSPAN JOIST
Lengths 30'–0 to 125'–0
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STEEL IS OUR BUSINESS... ...THESE CATALOGS HELP YOURS!
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CAT. #500
For the framework of your structure use Shlagro STOCK Steel Products
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MAKE THIS WASTE SPACE PRODUCTIVE
SCAFFOLDING for exterior · interior · concrete form work shoring · demountable structures
CAT. #350
TURNTABLES "custombuilt" from STOCK design
CAT. #650
IF IT'S MADE OF STEEL, SHLAGRO CAN MAKE IT
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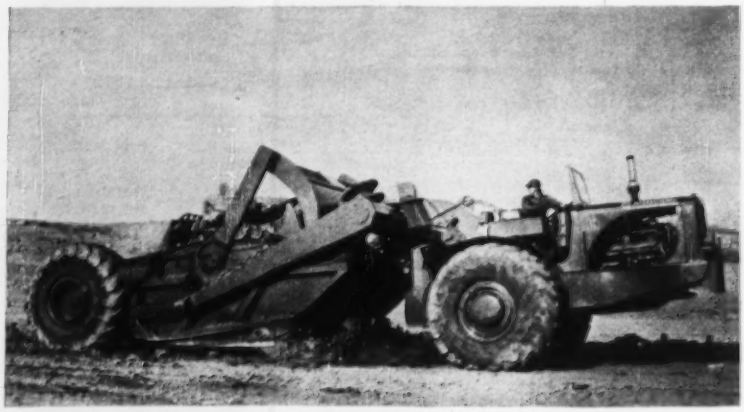
New Products



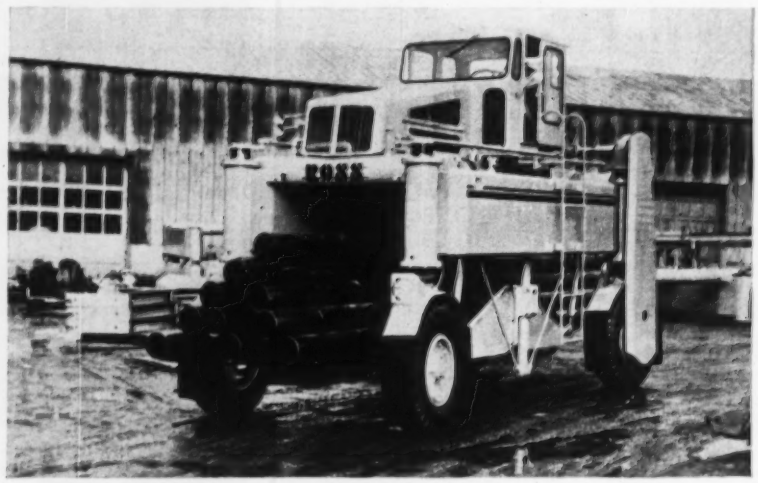
New Scraper Line Has Greater Capacity

A greater heaped capacity, plus a number of improved features including greater visibility for the operator are features of design changes in International's self-propelled, rubber-tired Payscraper line.

Resulting from customer demands, the new features include: Model 75 capacity increased to 20 cu yd heaped, Model 55 increased to 15 cu yd heaped; a straight-backed bowl; new clutch facings; higher apron lifts and improved ejector.

The clutch, made of a combination of powdered metals and ceramic materials similar to those used in jet airplane brakes, is said to give more positive engagement and reduce slippage; the back of the bowl has been redesigned to match a bulldozer blade, so that the dirt boils back into the bowl, then fills corners and heaps a full load very quickly. International Harvester Co., 180 No. Michigan Ave., Chicago 1, Ill.

(New Products continued on page 52)



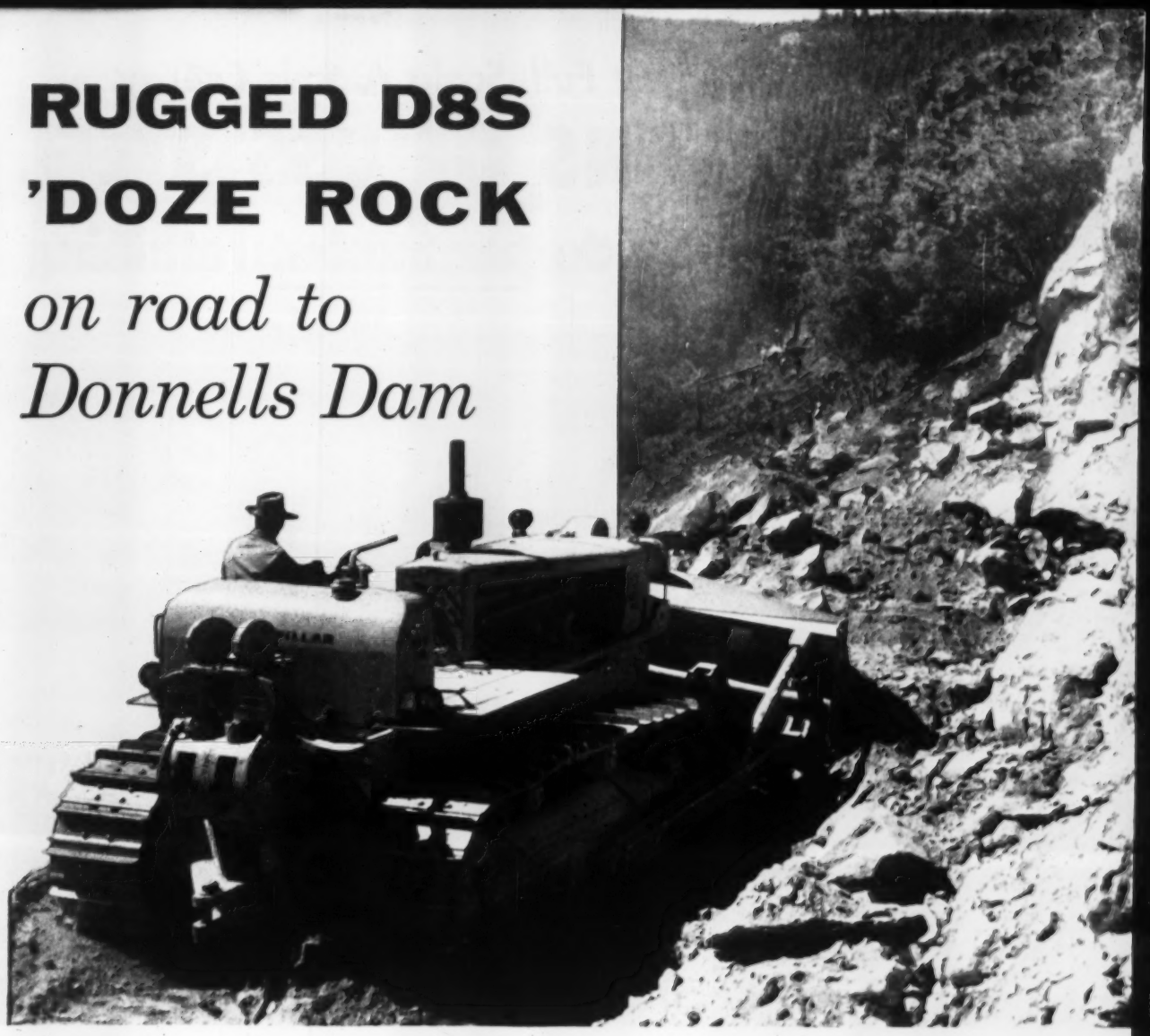
Straddle Carrier Is Fully Hydraulic

A new five-speed transmission, 15% more horsepower at the wheels and fully hydraulic control of load hooks are top features of a new 30,000 lb straddle carrier.

The machine—Series 93—replaces the previous model Series 91 and 92. All-welded steel construction and tubular cross members of the frame serving as fuel and hydraulic tanks make for minimum weight. Clark Equipment Co., Benton Harbor, Mich.

RUGGED D8S 'DOZE ROCK

on road to Donnells Dam



In rough mountain country above Strawberry, California, Tri-Dam Constructors are preparing for the $32,000,000 job of building Donnells Dam.

One of the first requirements is an 8-mile, 24-foot contour road leading up to the dam site and permanent camp. And most of the roadway has to be blasted out of steep granite slopes like the one pictured. Handling shot rock on locations like this takes tough equipment. That's why Tri-Dam is using CAT* D8 Tractors with No. 8S Bulldozers. There are 9 of them working on the project.

The D8 has been known as "king of the crawlers" for years. As jobs grew bigger and tougher, the tractor has grown with them. Today's D8 is new from the ground up—bigger, tougher, more powerful than any earlier model. Look at these features:

- *New heavy-duty 4-cycle diesel engine delivering 191 HP at 1200 RPM.*
- *Choice of torque converter or direct drive.*
- *Oil clutch, for smooth performance and long work life.*
- *New 7-roller track frame and long-wearing "water quenched" track shoes.*
- *New, more powerful starting engine with "in-seat" starting.*
- *Better job visibility and greater operator comfort.*

Your Caterpillar Dealer will be glad to show you how this new D8 can increase your production. And you can depend on him for prompt service and original parts. Ask him for a demonstration today.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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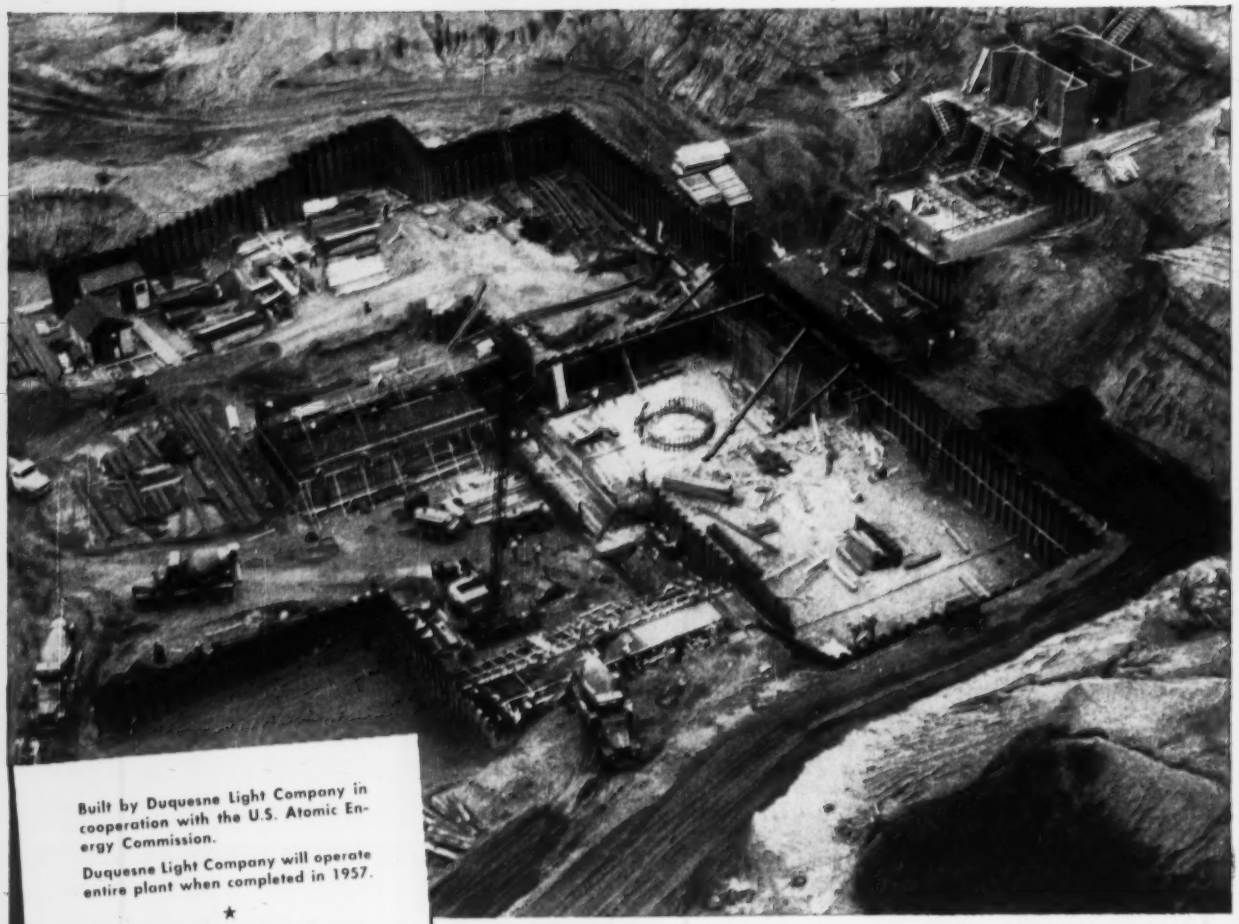
NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

At Nation's First Full-Scale Atomic Energy

700 TONS OF USS STEEL

provide permanent retaining



Built by Duquesne Light Company in cooperation with the U.S. Atomic Energy Commission.

Duquesne Light Company will operate entire plant when completed in 1957.

★

Westinghouse Electric Corp., under contract with the Atomic Energy Commission, is building the reactor.

★

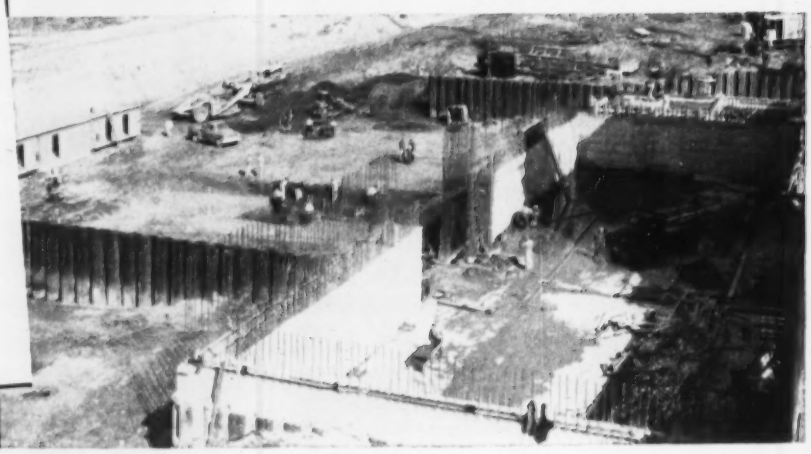
Burns and Roe, Inc. is the agent-constructor for Duquesne Light Co. Associates are J. Rich Steers, Inc., and Hatzel and Buehler, Inc.

★

Ferguson & Edmundson Company is sub-contractor for Excavation and Piling.

★

Stone and Webster Engineering Corporation is Architect-Engineer for Westinghouse.



Electric Power Plant —

SHEET PILING

wall for main structure of big project!

THE LARGE PICTURE at the left shows the foundation construction for the nation's first full-scale nuclear power plant.

Being built by Duquesne Light Company in co-operation with the Atomic Energy Commission, the huge project is located at Shippingport, Pa.—on the Ohio River about 25 miles below Pittsburgh.

This revolutionary plant, which will have a nuclear reactor producing at least 60,000-kw net electrical output, as well as a turbine-generator capable of 100,000-kw, will deliver electricity to Duquesne's customers in Allegheny and Beaver Counties.

Because the main structure will extend 75 ft. below grade, 23,896 lineal feet of USS sheet piling were driven to an average depth of 36 feet into the ground for the necessary retaining wall prior to the extensive excavating.

The approximately 700 tons of sheet piling not only served as the outside form for the pouring of the reinforced concrete walls, but were left in the ground permanently as a strong, durable steel skin for the concrete—*a double wall, so to speak.*

The application of USS Steel Sheet Piling at Shippingport is further proof that this versatile construction medium is the ideal solution to any problem involving the retention and control of earth or water. Forming a continuous wall, interlocking USS Sheet Piling offers easily installed construction that is strong, rugged and lasting.

For detailed information about this economical steel piling which is available in straight-web, arch-web, and Z-sections, contact the nearest office, or write to our Pittsburgh headquarters.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

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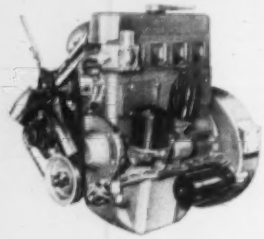
UNITED STATES STEEL

HERCULES *announces*

new INTERCHANGEABLE models

G.O. SERIES — GASOLINE OVERHEAD VALVE



G.O. 4 CYL.

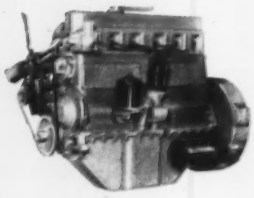
G.O. 4 CYL.

Model	Max. H.P.
G.O. 173	67 @ 3200 R.P.M.
G.O. 198	76 @ 3200 R.P.M.
G.O. 226	87 @ 3200 R.P.M.

G.O. 6 CYL.

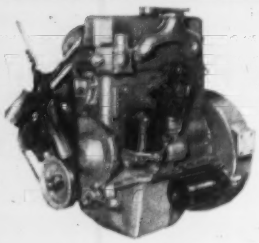
Model	Max. H.P.
G.O. 260	102 @ 3200 R.P.M.
G.O. 298	114 @ 3200 R.P.M.
G.O. 339	131 @ 3200 R.P.M.

Also available for L. P. G., Kerosene and Natural Gas



G.O. 6 CYL.

D.D. SERIES — DIRECT INJECTION DIESEL



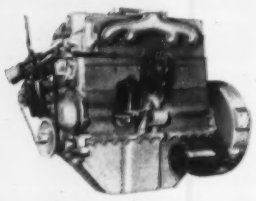
D.D. 4 CYL.

D.D. 4 CYL.

Model	Max. H.P.
D.D. 173	50 @ 2000 R.P.M.
D.D. 198	57 @ 2000 R.P.M.
D.D. 226	65 @ 2000 R.P.M.

D.D. 6 CYL.

Model	Max. H.P.
D.D. 260	75 @ 2000 R.P.M.
D.D. 298	85 @ 2000 R.P.M.
D.D. 339	99 @ 2000 R.P.M.



D.D. 6 CYL.

Additions – to the extensive line of **Hercules Engines**

With the addition of these four new series consisting of 12 models, the Hercules Motors Corporation has increased its line of engine sizes and types to better serve the varied needs of the many industries which require gasoline and diesel engines for their power requirements. This expansion of the Hercules line will enable manufacturers of end products to have a wider selection of engines and power units to meet individual requirements, all available from one dependable source.

Mounting dimensions of the new G.O. gasoline and D.D. diesel four cylinder engines are the same. The G.O. gasoline and D.D. diesel six cylinder engines are also interchangeable from the standpoint of mounting dimensions. Since this new series consists of parallel lines of gasoline and diesel engines, they can be used interchangeably, if desired, in any end product within the recommended engine speed ranges. Further, these engines can be built with manifolds and accessory equipment on either side, as the cylinder blocks are symmetrical and can be turned end for end.

Another important feature of these new models is the great number of parts which are interchangeable between the fours and sixes, and also, between the gasoline and diesel. This greatly simplifies the parts and service requirements. The only essential differences between these gasoline and diesel engines are cylinder heads, manifolds, pistons and fuel handling equipment.

Further information on the G.O. and D.D. series may be obtained by writing the factory.

HERCULES MOTORS CORPORATION

CANTON, OHIO

. . . New Products

120-lb Diaphragm Pump Does Heavy-Duty Work

Heavy-duty pumping of sand, muck, mud, and sewage can be handled by a new 120-lb diaphragm pump at the rate of 5,000 gal per hour.

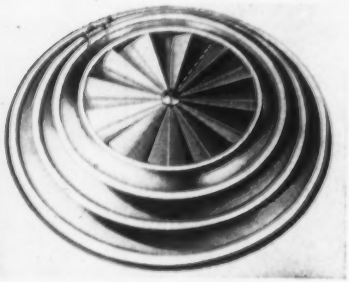
The pump—which will run six hours at full capacity on one gallon of fuel—is completely self-priming and dry-primes up to 15 feet in 15 seconds.

Powered by a single-cylinder, two-cycle gasoline engine, the pump operates at engine speeds between 1,500 and 2,850 rpm. The throttle on the float-type carburetor can be hand-regulated to adjust engine speed for different pumping conditions: slow speed for seepage control, full speed for capacity pumping.

According to the manufacturer, use of all anti-friction bearings and all heat-treated, cut steel gears in the pump end holds down wear and maintenance costs to a minimum. Gears are completely enclosed for full protection. Flapper valves in suction and discharge fittings are self-cleaning to prevent clogging.

The new pump—designated as Model 20DP3—has a suction lift of 28 ft and a total head of 50 ft, including friction. Homelight, 75 Riverdale Ave., Port Chester, N. Y.

(*New Products continued on page 57*)



Air Diffuser for High Bays

Recommended for use in heating, ventilating and air conditioning large areas, a new-type ceiling diffuser literally shoots out air either in a downward stream or a horizontally diffusing air mass.

The adjustable Model BP Venturi-Flo Diffuser is said to be capable of projecting hot air from mounting heights up to 50 ft with a temperature differential of 40 F. With smaller temperature differentials, the vertical throw increases.

To provide air patterns ranging from vertical to horizontal, the diffuser can be adjusted from the floor, or if this is not practical, an adaptor unit is furnished that enables it to be adjusted from the crawl space above the ceiling. Barber-Colman Co., Rockford, Ill.

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CLIPPER MADE THE **FIRST** MASONRY SAW—CLIPPER STILL MAKES THE **BEST** MASONRY SAW!

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Wet or Dry Cutting
Convertible to Concrete Sawing, a Model to fit every budget, priced from **$265.**

Let Your Cutting Problems Be Our Problems!

Clipper Masonry Saws and Clipper Diamond and Abrasive Blades have been the answer to masonry cutting problems for nearly 20 years. Only a Clipper Masonry Saw has these EXCLUSIVE PATENTED features: Select-A-Notch Height Adjustment - Pressure Equalizer Spring - Wet or Dry Pump - Water Application System - Adjust-A-Cut control feature - Positive Head Lock - Hinge Lok Blade Guard — These features provide the ONLY Low-Cost Efficient method of quickly and easily cutting all masonry materials. ORDER A CLIPPER TODAY on FREE TRIAL on your Job.

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Blade after blade, on tile to block, Clipper Wet or Dry Abrasive, Diamond or Break-Resistant Blades, out-perform, out-cut and out-last any other blade and give you consistent profit-making performance on all masonry materials — hard — soft — porous — dense. Today Clipper Blades are still your Best Buy!

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A Clipper Masonry Saw and Clipper Blades are the best combination for the Fastest Cutting... at the Lowest Cost... with the Greatest Ease —Anytime—Anywhere. Results are unconditionally guaranteed when you use the Clipper combination. Use the Coupon to learn more of what Clipper will do on your job—OR Wire, Phone or Write for immediate Shipment on Free Trial!

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- ☐ Please send complete information on Clipper Masonry Saws.
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- ☐ Clipper Diamond Blades. ☐ Clipper Standard Abrasive Blades.
- ☐ Clipper Concrete Saws. ☐ Send Factory Representative.

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NEW!
for the FORDSON MAJOR DIESEL

New Ford F.M.D. Industrial Loader has "step-on" design, gives you ½ cu. yd. bucket capacity . . . double-action lift cylinders for down crowd . . . 2000 lbs. maximum load capacity at full lift . . . over two tons of break-away lift capacity . . . 11'10" maximum lift, 32" bucket reach. Bucket tilt back holds full capacity loads, and parallel linkage of lift arms keeps bucket approximately level at any lift height. See this high production, fuel-thrifty team in action on your own job!

LOAD A YARD A MINUTE!

NEW FORD step-on INDUSTRIAL LOADERS for Ford Tractors

Job-proved on applications like your own! Ford's new "Step-on" Industrial Loaders are *all new*, yet they've been field-tested throughout the country by users like yourself, on jobs like your own. You can specify new Ford Industrial Loaders with confidence.

Ample capacity for a wide range of jobs! Ford's new "Step-on" Industrial Loaders are rated at 1000 pounds load capacity at dumping height. They give you over a ton of break-away lift capacity for work in hard or frozen ground.

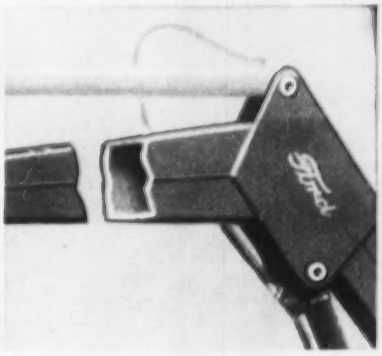
A selection of job-fitting attachments! You can turn Ford Tractor power into more profit with a quick-attaching ⅓ cu. yd. material bucket, ⅝ cu. yd. light material bucket and fork. Dozer blade and crane to be available soon. There's also a choice of single- or double-acting lift cylinders to fit your individual job requirements.

Compare them with any loaders in their class! Check ease of handling . . . better weight distribution means easier steering with Ford. Check ease of operation . . . Ford Loader controls are mounted close at hand for faster, easier operation. Check operator safety . . . Ford bucket design reduces danger of falling material. Check all these advantages and more by contacting your nearby Ford Tractor and Equipment Dealer. Call him now, or write to:

TRACTOR AND IMPLEMENT DIVISION
FORD MOTOR COMPANY
Birmingham, Michigan

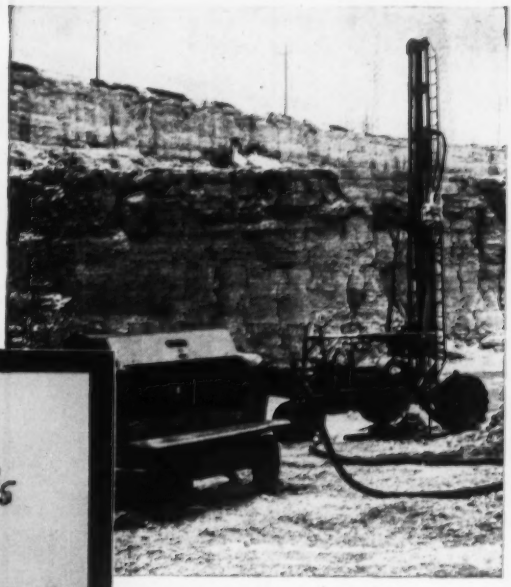
CONVENIENT "STEP-ON" DESIGN – Easier than getting into your own car! Open design and wide, low step plates save operator time and effort. A real convenience and safety feature.

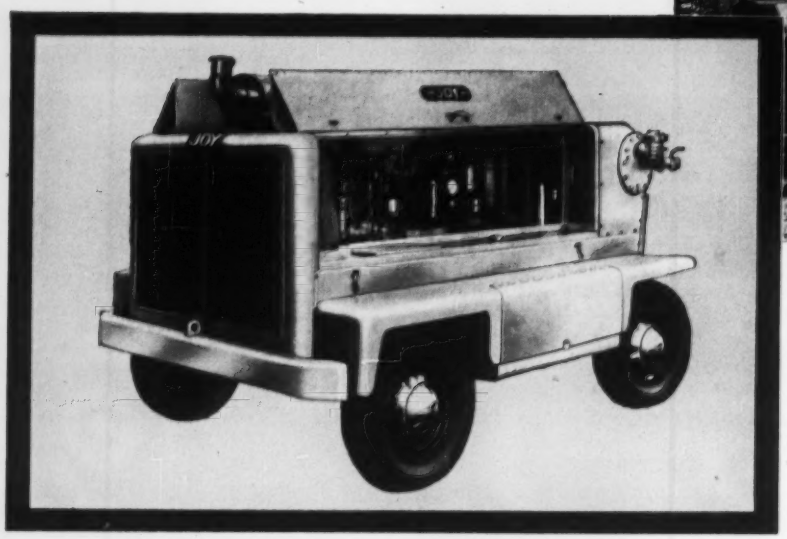
HIGH LIFT AND LONG REACH speed loading of high-bodied trucks. Lift is 10'10" from ground to bucket bottom. Reach is 26" from tractor bumper to bucket lip at full height.



RUGGED BOX FRAME CONSTRUCTION Built to stand up under the abuse of shock loading from stockpiles. Dependable service. Less dead weight . . . more payload per pound of loader.

Not only NEW but DIFFERENT





Joy RP-600 Airvane Rotary Portable Compressor furnishing air for a Joy Challenger Drill in an Illinois quarry.

JOY AIRVANE ROTARY COMPRESSOR

Joy engineers started with all accumulated rotary information—then went on from there to produce, we believe, the best rotary compressor available today. These Joy developments contribute materially to a superior machine:

THERMAL BY-PASS Heats oil quickly, keeps it flowing into compressor at correct temperature—*under all weather conditions.* Efficient oil circulation system provides immediate lubrication (no dry starts).

SPLINE COUPLING Does away with a clutch, gives greater power-transmission efficiency. It's light, takes little space, is virtually indestructible.

TWO-STAGE FILTER-SEPARATOR Removes oil from air and returns it to circulation system so efficiently that oil consumption becomes a minor item.

ECONO-MISER load control automatically selects most efficient engine speed, maintains steady pressure, saves fuel, increases compressor life.

SHORTEST TURNING RADIUS Compact design and low center of gravity give the shortest turning radius of all rotaries. With light weight, this spells *maneuverability.*

OTHER FEATURES (often overlooked) Body is waterproof —tool box and fuel tanks can be locked—doors stay open without props—three lifting rings support entire machine —push-button uses ether-capsule for cold weather starting.

Write for complete information to **Joy Manufacturing Company Oliver Bldg., Pittsburgh 22, Pa.** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

Write for FREE Bulletin 69-24

Consult a Joy Engineer

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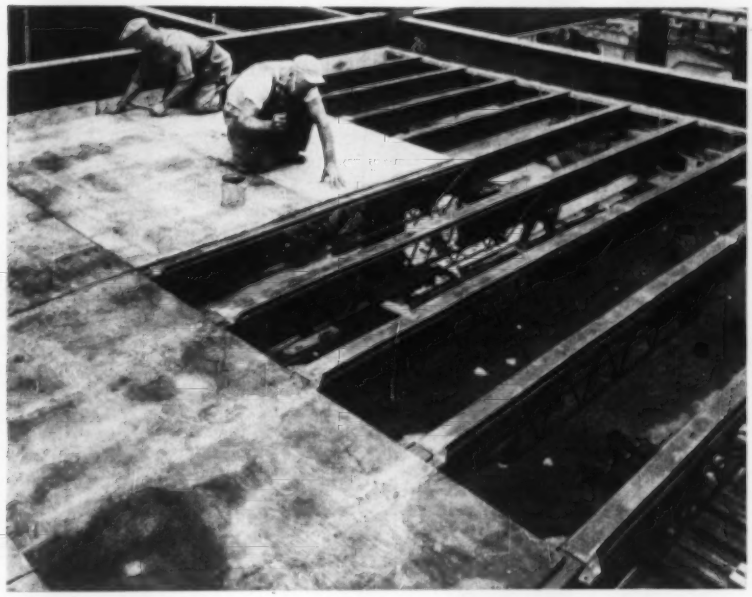
CONSTRUCTION EQUIPMENT MANUFACTURERS
FOR OVER HALF A CENTURY



Support for Forms Adjusts Two Ways

Developed in Europe with patent applications pending in the U. S., S-L Spanall, an adjustable beam intended principally as formwork support, offers a boom to builders because of its flexibility.

The product is essentially an open-web joist that can be varied in span as well as in camber. The sections are designed to support concrete formwork in spans up to 29 ft 6 in. without intermediate shoring.

Weighing about 8 lb per ft for building construction, a typical joist consists of latticed steel end sections into which telescope a central web-plate section. In putting up formwork, it is important to have some camber in the forms to assure that the floors will be level when the concrete load is applied. With a Spanall section, this camber is set by adjusting one bolt. The amount of adjustment is given by a chart. The forms are stripped by merely loosening this adjusting screw, which relieves the stress and allows the supports to be removed.

Advantages claimed for the system are that it can reduce formwork costs by 40% or more; span lengths may be varied throughout the building without causing appreciable added expense to the builder; sections can be telescoped for storage or shipment; they can be reused for years; and there is no upkeep problem.

Standard sections vary in size from 4 ft 2 in., to 11 ft 8 in. long for the lattice sections; and from 6 ft 8 in., to 9 ft 11 in. long for the web-plate sections. Sections of any length may be assembled interchangeably to attain any desired span. Heavier sections are expected to be available in the spring of 1956 for use on bridges and tunnels. Universal Builders Supply Company, Inc., 51 East 42nd St., New York 17, N. Y.

After One-Year Field Test "Baby" Rock Drill Is on Sale

Completion of field testing and commencement of production of its SW-1 general purpose rock drill accompanied announcement by the Thor Power Tool Co., that it had also redesigned and improved its heavy-duty model BW-1, which with the alteration becomes model BW-2 in its line.

The SW-1, a compact drill for mounting on either a Thor 75 or 77 sinker drill or on a model 82 or 92 drifter, is said to produce exceptionally high drilling speed with unusual hole cleaning capacity.

Both the new and the improved models feature a conveniently grouped automatic control and a chain drive mast that permits complete reversal and consequently longer drill life. The new BW-2 incorporates a newly designed mast with improved chain tension adjustments and advanced shock absorbers to harness effectively the power output of a 4-in. drifter. Thor Power Tool Co., Aurora, Ill.

MAKES BETTER— MORE WORKABLE MORTAR!

Get snug, tight, neat joints!

Use MORTITE in *any* mortar, *anywhere*, under *any* conditions. It produces a smooth "buttery" mix with a minimum of water.

Dry mortars are frequently too stiff to be workable. Poor compactness and poor adhesion can result. Truscon MORTITE improves the workability without the addition of detrimental excessive mixing water!

Truscon MORTITE provides greater plasticity which allows time for smooth positive trowelling and "striking-off" of the joints. Less time and effort and lower costs result.

Specify and use MORTITE for better mortar at lower initial cost and long range savings in repointing costs!

Send coupon below to Truscon Laboratories. Learn how MORTITE has produced results for leading engineers and contractors on major projects all over America and the world.

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for the 1001 applications where safety and strength come first. Kerrigan Steel Grating is BONDERIZED for corrosion resistance and extra years of life.

STAINLESS and MONEL
non-magnetic steel for the chemical, oil and packing industries . . . for ANY installation where high resistance to heat, acids, chemicals, and corrosion is needed.

TRULY . . .
In both size and type, there is a Kerrigan Weldforged grating for every need. Let our new catalogs prove it to you. Send for the one you think best answers your need (or ask for ALL FOUR if you wish). We will also be glad to send you a desk-size grating sample. Write Kerrigan Iron Works, Inc., General Sales Office, 274 Madison Ave., New York City.

RIVETED STEEL
where it is desired to match existing grating.

ALUMINUM
spark-proof for those whose need is strength AND lightness. Extra safe and strong. Allowable fiber stress 15,000 psi. Modulus of elasticity 10,000,000 psi.

KERRIGAN GRATING
CUSTOM-MADE FOR YOUR JOB AND SAFE—IT'S Weldforged

Publications

Blacktop facts—A 36-page catalog, "Black Top Road Maintenance and Construction Equipment," covers highway and road maintenance equipment. It describes and illustrates engineered pressure distributors, supply tanks, sprayers, brooms, asphalt kettles, heater-planer, rollers and accessory tools. Littleford Bros., Box 39-415 East Pearl Street, Cincinnati 2, Ohio.

Grader—Design, engineering, construction and performance data on the Allis-Chalmers Model D Motor Graders is given in a 16-page, two-color catalog (MS-459). Cutaways, combustion graphs and other illustrations facilitate study of the features of both the gasoline and diesel engine Model D Motor Graders. Construction Machinery Division, Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

Concrete equipment—Catalog 560 illustrates concrete vibrators, portable concrete grinders, vibrating screeds and rotary trowels (24 to 46 in. diameter). This 16-page catalog describes the manufacturer's complete line of gasoline and universal vibrators. Included are directions on how to build your own vibratory screed beam. Stow Manufacturing Co., 19 Shear St., Binghamton, N. Y.

Sheet copper practices—52 full-page construction detail drawings and a facing page of descriptive text for each, comprise 104 of the 109 pages in the American Brass Company's publication C-1, "Modern Sheet Copper Practices." Also including suggested general specifications for sheet copper work, the book is intended as a guide for architects, specification writers and sheet metal workers. Applications dealt with include roofing, flashing, gutters, expansion joints, snowguards, and sheathing for canopies, spires and curtain walls. American Brass Co., Waterbury 20, Conn.

Metal lath—"Specifications for Metal Lathing and Furring," 1956 edition, covers contact, furred and suspended ceilings; beam and column fireproofing; solid and hollow partitions; wall furring; metal lath attached to wood supports; and reinforcing for exterior stucco. One page lists fire-resistance ratings for a number of construction schemes. The 16-page booklet is by Metal Lath Mfrs. Assn., Engineers Bldg., Cleveland 14, Ohio.

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is the new-strength wire in Roebling's

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WIRE 1105 ROPE

AS SIZES and constructions go, Royal Blue is like the ropes you have used until now... but the likeness ends there.

Royal Blue is made of Roebling's new 1105 wire, the strongest, toughest wire developed up to now for use in any wire rope.

Royal Blue Wire Rope is as enduring as the wire from which it is made.

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WASHINGTON OFFICE . . Woodward Building, 733 15th Street, N.W., Washington 5, D.C.

From this intermeshing nightmare of vehicles that today characterizes London's Elephant and Castle road intersection where 42 traffic lanes converge from six main roads . . .

London Removes an Ancient Bottleneck

Since the mid-nineteenth century, one of London's worst traffic bottlenecks has been the Elephant and Castle road intersections. Here, 42 different traffic lanes with 3,000 to 4,000 vehicles an hour converge from six main roads to squeeze through a single intersection. Three of these roads are fed by seven bridges across the Thames. In addition, the site is served by two underground stations, one main line station and 26 bus routes.

All this is about to change. A plan has just been approved by the London County Council to build a new road system as well as a business center at this location. The development is to take place over the next five years, during which $8.4 million will be spent in acquiring 30 acres of property (to be leased largely to private developers) and an additional $1.5 million for roads.

Buildings contemplated include a 17-story office building, and a huge building that will be made to house a swimming pool, restaurant and sports center. A large pentagonal sunken area in the center of the traffic circle will be used as the location for 100-car parking lot.

The rehabilitation project was made possible because of extensive bomb

. . . **To this** proposed reconstruction of area, with new buildings, dual circles to separate traffic. Circles are connected by an 8-lane highway.

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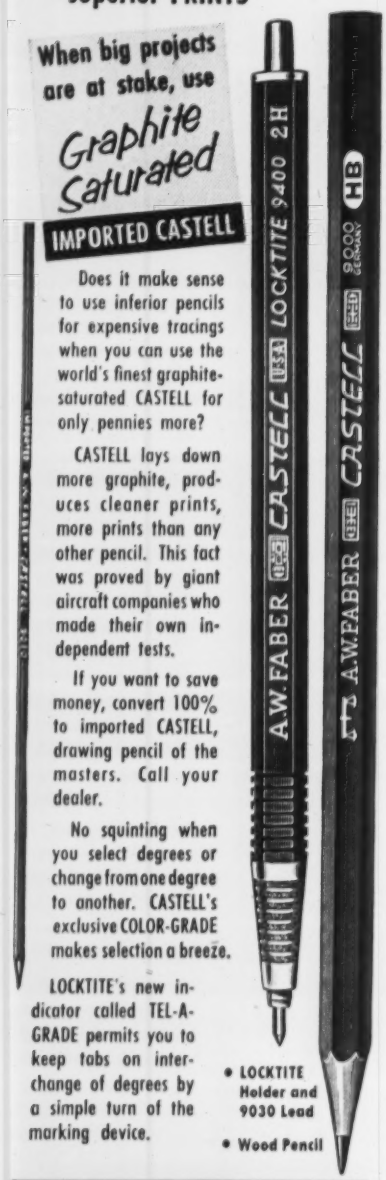
If you want to save money, convert 100% to imported CASTELL, drawing pencil of the masters. Call your dealer.

No squinting when you select degrees or change from one degree to another. CASTELL's exclusive COLOR-GRADE makes selection a breeze.

LOCKTITE's new indicator called TEL-A-GRADE permits you to keep tabs on interchange of degrees by a simple turn of the marking device.



• LOCKTITE Holder and 9030 Lead

• Wood Pencil

A.W. FABER-CASTELL
PENCIL CO., INC. NEWARK 3, N. J.

damage in the area. Only one or two important buildings are still left standing.

Since overpasses were deemed too costly and confusing for the maze of traffic that must be handled, the new plan chiefly provides a means of sorting out the 42 streams of traffic. The traffic circle will be located at the northern end to accommodate traffic on the three roads from the heart of the city. A smaller rotary at the southern end will take traffic coming from other directions. These two junctions will be connected by a 90-ft-wide, 8-lane highway, about 100 yd long.

Work will be done in two stages: (1) Construction of the southern rotary and connecting road systems, including clearing the eastern part of the site, and (2) the remainder of the project. It is hoped to start the second stage by 1957, with the first stage beginning this summer.

Paris to Repeat Exhibition Of Building, Public Works

Paris' second International Building and Public Works Exhibition, a display of construction materials, equipment and methods, will run from June 16 through June 28, 1956.

Open to manufacturers, builders and contractors of all nations, the exhibit is designed to attract world-wide patronage of architects, engineers, contractors, municipal officials, and other individuals and organizations with an interest in the building industry.

Sections of the exhibition include contractors' and public works equipment, building materials, housing prototypes, professional and technical equipment and information services.

Additional information may be obtained from the Commissariat General, 112 Rue de Charenton, Paris 12, France.

Rome International Airport Nears the Completion Stage

Italy's Ministry of Public Works has awarded the third construction contract on its Inter-Continental Airport project at Rome.

The $5.8-million contract—along with others to be awarded this year—will complete works needed to assure partial operation of the airport. Under the new contract a start will be made on the construction of aprons, a taxiway, connections between runways 1 and 2, and the first technical services. The job also involves installations for lighting and signaling and for drainage and canals.

Runway No. 1 already has been completed. It is 9,842 ft long, 196 ft wide, and features 393-ft safety paths on each side for instruments flying. A second runway—planned for the future—will be 5,145 ft long, 196 ft wide, and flanked by two 240-ft wide safety paths.

During 1956, contracts will be awarded for the final $22 million worth of work required for the telephone system, electric cables and electric radio-plant.

Two-Mile Monorail Line Planned in West Germany

Alweg Research Co. has announced plans to build a 2-mi long, overhead monorail line in West Germany.

The projected line, scheduled to be completed in a year, will carry freight and passengers between the Rhine towns of Stannheim and Flittard. The trains sit astride a single overhead line and reportedly can travel at a speed of 150 mph.

The line will be the company's first full-size project. Up until now, Alweg has been experimenting with a half-size model line and trains in a field outside Cologne.

Cambodian Road Contract Goes to U. S. Engineers

Cambodia has taken the second major step toward start of construction on a highway to link its capital—Pnom-Penh—with a new deep seaport on the Gulf of Siam.

Michael Baker, Jr., Inc., Rochester, Pa., has been awarded a $703,000 engineering contract on the road project. Under the contract the firm will supervise and inspect all construction operations needed to complete the highway. At the same time, it will train Cambodian technicians.

The U. S. through the International Cooperation Administration, has agreed to provide about $15 million to build the road. The port is being constructed by France.

Two-thirds of the highway route will run over existing roads that are now in various stages of repair. One-third will follow present trails or paths through mountainous and jungle terrain.

The first phase of the project got under way last year, when ICA financed a $19,000 reconnaissance survey by the New York City firm of Brown & Blauvelt. The third and final step in the project—awarding a construction contract to a U. S. firm—is expected to take place sometime next month.

Pushed for Greater Drafting Room Output?
Modern Reproduction Machines Will Help You Get It!

NOW Is the Time to Get Your New, Modern BRUNING COPYFLEX MACHINE!

The boom in production means more pressure than ever for engineering drawings and prints. Right now is the time to replace that old inadequate reproduction machine you've been putting up with — now's the time to get a modern, efficient Bruning Copyflex.

In just the last year, Bruning has introduced five new, advanced machine models, one of which is shown at the right. These machines offer you the famous problem-free installation and operation of Copyflex . . . no exhaust venting, no plumbing or auxiliary equipment, no installation other than an electrical connection. They bring you faster reproduction speed and a host of operator conveniences such as fast return of originals, automatic separation, front or rear delivery. They are the efficient, economical, modern reproduction machines that will help you boost your drafting room output, keep costs at a minimum.

Now is the time to act. Mail the coupon below. You'll be glad you did!

Copyflex Model 500
A new, ultra-fast, heavy-volume machine offering top mechanical speed of 40 f.p.m., automatic separation, front or rear delivery, automatic stacking, and a host of other advanced features.

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Please send me information on Copyflex process and Model 500 machine.

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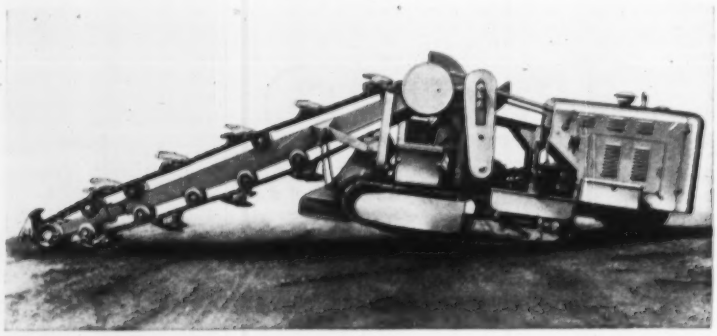
It's easy to dig more ditch

The Gar Wood-Buckeye 407 ditcher digs a full 10 feet deep, from 17 to 24 inches wide.

LIVE HYDRAULIC BOOM WITH POSITIVE DOWN-PRESSURE

The rugged boom on the 407 is raised, lowered and held by an independent, hydraulic control system. Positioning is fast and positive. Double-acting hydraulic cylinders provide full crowd. Illustration shows that down pressure of boom is sufficient to raise machine off ground!



with a Gar Wood Buckeye 407

Put yourself in the seat and see the difference...

SPEEDS YOU CAN FIND and use! One selector lever plus high-low range lever makes changing speeds easy. No complicated diagrams to figure out!

INDEPENDENT LEVER STEERING is exceptionally easy, positive and reliable. Each crawler has a separate clutch and brake . . . no tendency to wander!

PUSH BUTTON CONVEYOR SHIFT speeds work around obstructions. Just push the button to shift conveyor electrically while digging . . . no need to stop machine or leave seat.

INSTANT BOOM CONTROL, with live hydraulic action, makes it easy to maintain grade, clear underground obstructions. One convenient lever does it!

Fast, accurate adjustment for changing conditions saves time, boosts production

The 407 is far easier to operate, control and adjust than any other ditcher in its class. Here's why:

Streamlined and compact, the 407 has the smallest practical dimensions for the widest range of applications. Lowest overall height, 7 feet 3½ inches, for easy transport without disassembly. It's exceptionally maneuverable in close quarters . . . digs neat, clean ditch right up to walls and foundations. Also digs in reverse for tunnelling and undercutting.

Correct balance . . . light weight . . . low center of gravity . . . excellent weight distribution add up to greater stability on any grade. Rugged crawlers provide maximum traction and minimum ground pressure.

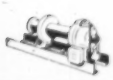
The Gar Wood-Buckeye 407 is the world's largest selling ladder-type ditcher! Find out why. Call your Gar Wood-Buckeye dealer or write: Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan • Findlay, Ohio

Plants in Wayne and Ypsilanti, Mich.; Findlay, Ohio; Mattoon, Ill.; Richmond, Calif.

Gar Wood Truck Cranes



Gar Wood Winches

Gar Wood-Buckeye Ditchers

Gar Wood-Buckeye Finegraders

Gar Wood Tractor Equipment

Gar Wood-St. Paul Hoists & Bodies

MORE THAN 61,000 SQ. FEET OF TECTUM

provide roof deck, insulation, sound control and finished ceiling at Normal College Field House

Michigan State Normal College Field House, Ypsilanti, Michigan. Giffels and Vallet, Inc., L. Rossetti, Detroit, Associated Engineers and Architects; R.S.Gerganoff, Associate Architect, Ypsilanti, Michigan. Kurtz Building Company, General Contractors; Tectum installation by Chaffee Roofing Co., both of Detroit.

This is the new field house at Michigan State Normal College in Ypsilanti, Michigan. Here, extra-curricular activities of all kinds will take place—and, crowds will cheer in every season of the year. Their cheer will be controlled by the sound absorbing qualities of Tectum, the versatile roof deck that will also keep the field house warmer in the winter and cooler in the summer.

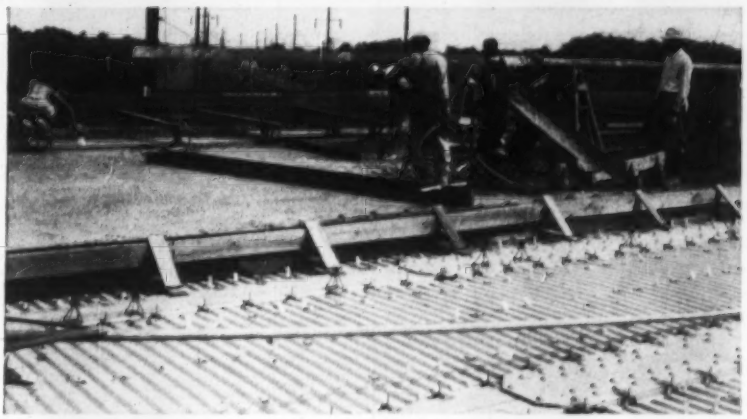
In fact, Tectum performs 4-functions-in-1 in this building; it's a roof deck; it's insulation; it's acoustical material and it's a finished ceiling—all in one plank.

Tectum was installed at the field house quickly and effectively by a minimum of workmen. Built-up roofing was applied immediately on the Tectum without preliminary dressing or curing of the roof deck. Left its natural off-white color, it may be painted at any time.

This field house illustrates, again, why architects, engineers and builders everywhere are selecting Tectum for all types of buildings. For your next building project, consult your nearest Tectum distributor or see our catalog in Sweet's—2e/Te. Tectum Division, Peoples Research and Manufacturing Co., 510 South Sixth Street, Newark, Ohio.

For Plants • Commercial Buildings • Institutions • Homes

PROBLEM: To place the deck of a new bridge over this electrified railroad—safely.



SOLUTION: Use corrugated metal forms left in place to eliminate stripping.

Where Metal Forms Saved the Day

The main line of the Pennsylvania Railroad between New York City and Philadelphia is a tough place to bridge. Here, along five sets of electrified tracks, 187 trains pass daily. Power is supplied to the locomotives by five sets of overhead high-voltage lines.

After the ticklish job of erecting steel girders for a four-span highway bridge over the Pennsy's main line on U. S. Route 13, the builder still faced a big obstacle. He had to place a concrete deck over the high-voltage lines without endangering the railroad and the bridge crew. Train speed at this point is 80 mph.

The solution decided upon was to use for the bridge deck corrugated steel forms that could be left in place. This eliminated shoring and the hazardous task of stripping. It also made it unnecessary to install security nets.

Preliminary load tests made on the site with these forms met with the approval of the owner—the Pennsylvania State Highway Department, and also the Pennsylvania Railroad.

The forms, of galvanized steel corrugated trapezoidally, were placed between the top flanges of the girders in sheet widths of 24 in. and were clamped to the underside of the top flanges. For added safety, the clamps were then welded to the girders. At form joints, the sections were lapped at the edges and locked in place with wedge and clip fasteners.

Contract for the bridge was awarded to C. J. Langenfelder & Son, Baltitmore, Md., who erected the formwork in collaboration with David Goldberg & Sons. The corrugated forms were designed and manufactured by United Steel Fabricators Inc., Wooster, Ohio. Chief engineer of Bridges, Pennsylvania State Highway Department is L. A. Porter, and chief engineer of Bridges and Buildings, Eastern Division, Penn. RR, is W. G. Kemmerer. N. A. Yoe was Langenfelder's superintendent of bridge construction.

(F&O continued on page 68)

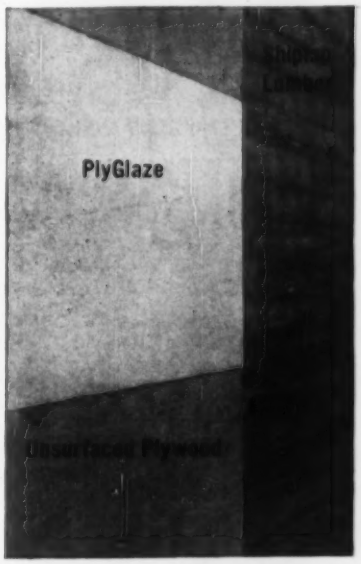


Photo taken right after stripping forms proves that you get the...

FINEST SURFACE with PLYGLAZE® CONCRETE FORM PANELS

READ "finest" both ways: PlyGlaze *itself* has the finest, smoothest surface of any form material; PlyGlaze-formed *concrete* surfaces are the finest—smooth, even-textured, with no trace of grain pattern. Savings on finishing costs alone frequently offset slightly higher cost of this premium material. See Sweet's File or use coupon for more information.

Another member of the famous Tree Life Family of Forest Products
Hard, glossy-smooth wear resistant fused resin-fiber surfaces.
Top-quality Exterior plywood (EXT-DFPA). Standard panel sizes.

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Model

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Roly-Door
STEEL SECTIONAL
OVERHEAD DOORS

CLEAN, MODERN FUNCTIONAL LINES that blend smoothly with all types of architecture are the hallmark of Morrison Roly-Doors.

SIMPLIFIED DESIGN ensures safe, easy, trouble-free installation and operation . . . manual, electrical and by remote control.

BONDERIZED, ALL-STEEL CONSTRUCTION provides lasting good looks and a durability that defies the weather and years of hard use.

ECONOMICAL INSTALLED COST made possible by sound engineering and precise mass production . . . Morrison Roly-Doors are competitively priced.

OVER 1000 STANDARD SIZES ready for immediate delivery provide a Morrison Roly-Door for every overhead door requirement.

PROMPT DELIVERY, EXPERT INSTALLATION SERVICE by Morrison Roly-Door Distributors and Dealer-Installers located in all principal cities.

Complete Information and Detailed Specifications are available from:

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653 Amherst Street, Buffalo 7, N. Y.

Also manufacturers of MOR-SUN WARM AIR FURNACES AND AIR CONDITIONERS and MORRISON SERVICE BODIES.

IN CANADA: OVERHEAD DOOR SUPPLIERS
1330 Bloor St., W., Toronto 4, Ont.

Tractor Winch Eases Trucks on Slope

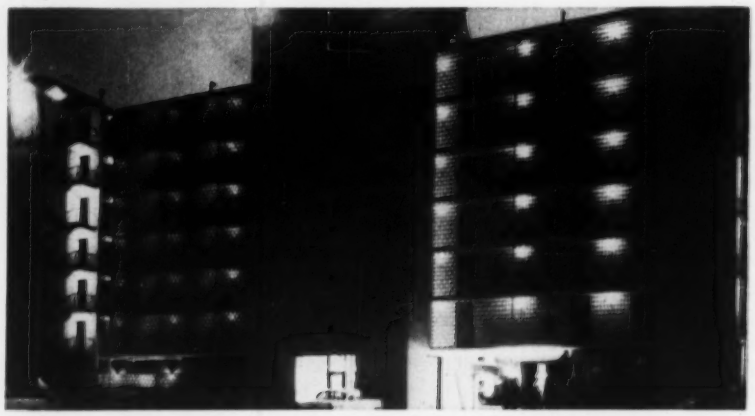
A rock blanket is being placed on the upstream face of the Missouri River's Oahe Dam from rear-dump trucks that must be reeled back up the slope after being emptied.

A 5-ft thick rock protection against wave action is being placed in three courses. The bottom layer is a 1-ft filter blanket of sand and gravel. On this is a 1-ft covering of spalls, rock 2 to 6 in. in diameter. These layers are topped with a 3-ft layer of riprap.

To get a truckload of material safely down the 33-degree slope, then get the empty truck back again, the truck is hooked to the winch of a crawler tractor on the crest. Cable is unreeled to ease the truck (35,000 lb loaded) down the slope. Reeling in helps the empty truck back up slope.

The work is being done by the Missouri Basin Construction Co. of Mitchell, S. D., subcontractor for Lytle & Green Construction Companies, a joint venture for stage 3 earthwork of this major Army Engineer project near Pierre, S. D.

(*F&O continued on page 70*)



Flue Linings Find New Role

Clay flue linings—used for years in chimneys of houses and buildings—have found another use as building exteriors. The new six-story Pan American Motel in New Orleans (photos) has 15,000 6-in. sections of such lining.

Linings are 8½-in. square and are separated by ½ in. of mortar. The noval wall is held by steel angles at the top and bottom of each floor.

Architects and engineers for the building are Curtis & Davis, New Orleans. The contractor was Lionel F. Favret Co., Inc., also of New Orleans.

PROLONGED CONFINEMENT COUNTS

...when the public is watching and listening

Clearing the way for the New York Thruway. Contractor must blast along heavily traveled thoroughfare . . . next to roads, homes, buildings, power lines. Problem: get good breakage . . . with good control.

Blast initiated at bottom of holes using ROCKMASTER millisecond delays in an alternate pattern. Prolonged confinement keeps explosives force working on burden . . . breaking rock. Entire mass lifted only few feet.

Well controlled heave. Traffic and Thruway move ahead. Well broken pile ready for quick removal. Here's maximum explosives efficiency . . . minimum vibration . . . without loud air snap, damage, and complaints.

PROLONGED CONFINEMENT—the Rockmaster® way

When you're blasting along Central Avenue, the eyes and ears of all Yonkers are on you. Using the ROCKMASTER method with its *prolonged confinement* of explosives force, Yonkers Contracting Co. and Corbetta Construction Co. got good breakage and good public relations in all their blasting.

Prolonged confinement counts! The right combination of ROCKMASTER millisecond delay electric blasting caps and Atlas explosives makes possible—

- **good control**
- **improved breakage**
- **greater efficiency**
- **better public relations**

Before your next blast, why not go over your *specific* problems with your Atlas representative? He'll help you get the most out of the ROCKMASTER method and your explosives. And get "Better Blasting"—Atlas' informative newsletter on latest methods and materials. Write us to put your name on our mailing list today.

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Draftsmen want to use STANPAT in place of the old-fashioned time-consuming method of re-drawing and re-lettering specification and revision boxes, standard symbols, sub-assemblies, components, and cross sections.

STANPAT reprints your standard drawing details on acetate sheets with adhesive on front or back. Guaranteed not to dry out, come off, or wrinkle. Reproductions come crisp and clear. Save drafting time and money; use STANPAT whenever drawing details re-appear on your tracings.

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Photo by International Harvester

Curb Excavation With Job-made Blade

Developed by H. C. Gale, a Harrisburg, Pa., contractor at a cost of about $100, this blade is claimed to be tops for home development projects. Made of ¾-in. steel plate, 28 in. wide with a 15-degree forward angle, the blade is said to cut a uniform curb-footing trench running about 22 in. in depth.

Drawings for the Blind—Here's How

Drawings so clear that a blind man can read them; this was the requirement put before an architectural-engineering firm of St. Paul, Minn., engaged to prepare plans and models for expansion of a home for the blind.

In drawing up plans for the $400,000 expansion of the Minnesota Organization of Blind, Inc., Robert Snow of Haarstick Lundgren and Associates, Inc. solved the problem thus:

The project was begun by drawing up a standard set of plans. Prints of the drawings were made and mounted on illustration board. Then, drafting tape was cut into strips the width of the walls and applied in several layers along the wall outlines. This produced, in effect, a Braille edition of the plans. To enable the blind to tell the difference between existing buildings and proposed ones, textured acetate sheets—cut to outline—were pasted on those areas of the plans that were new construction.

To give the blind clients detailed

Cut interference, save air time, multiply radio usefulness with new General Electric Personal Channel selective calling systems

New Progress Line Personal Channel Systems provide two-way radio users with individual calling, automatic recall or "leave a call"—make possible group calling with personal communication between dispatcher and driver after the call is placed.

Your two-way radio dispatcher can call or signal your drivers individually, with a new G-E Personal Channel selective calling system. He pre-selects the individual driver to be called or signalled by means of push buttons. Transmissions, with or without the electronic tones which provide the individual calling or signalling function, are made by pushing either of two push bars on a desk console.

With G-E Personal Channel individual calling built into two-way radio systems, dispatchers can call each driver—drivers need hear only calls beamed to them. Away from vehicles, drivers may automatically be recalled to the radio by a flashing light or sounding horn. If beyond range of the recall message, a signal automatically remains lighted on the radio control unit until the call is answered.

With a fleet equipped with Personal Channel group calling, drivers hear only calls from their own dispatcher. When the individual called answers the dispatcher, conversations then may become private.

New Progress Line Personal Channel Systems, for individual or group calling, effectively eliminate most of the nuisance interference due to crowded channel conditions. Both systems virtually eliminate bothersome "skip" interference from distant stations.

Present users of G-E all-electronic selective calling systems report increases up to one-third in useful air time. The ability to recall, or "leave a call", saves air time previously wasted when dispatchers repeated calls for drivers away from their vehicles.

NEW DEPENDABILITY

New G-E Personal Channel Selective Calling Systems now provide the highest possible reliability of operation. A new, simplified, electronic tone receiver selects proper tones in a more exacting manner than ever before. Limits within which the receiver will accept proper tones are dependent upon BOTH amplitude and frequency. The tones accepted must have the right amplitude as well as the right frequency.

Operating ranges of present two-way radio systems are not impaired by the addition of Personal Channel Selective Calling Systems.

All Personal Channel equipment can be incorporated within a single Progress Line mobile unit case, with the same cost-saving, interchangeable plug-in chassis feature provided in all Progress Line equipment.

Your General Electric Communications Counselor is ready now to recommend the G-E Personal Channel two-way radio system which will best serve you. For more information call him, or write: *General Electric Company, Communication Equipment, Section X2236-15, Electronics Park, Syracuse, New York.*

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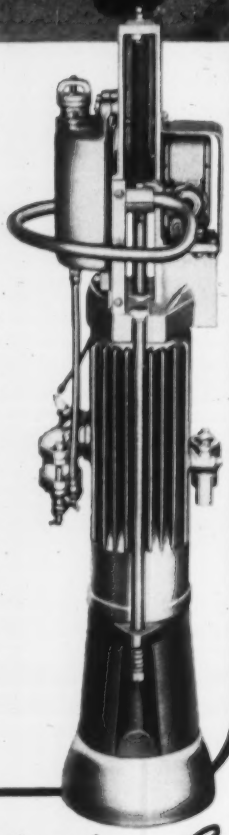
GENERAL ELECTRIC

GASOLINE BARCO RAMMER

Barco Performance Pays Dividends!

Job Finished on Time!—When project specifications call for SOIL COMPACTION, Barco performance can't be beat! In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—RAPIDLY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Atomic Energy, Air Bases, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Bridges, Buildings, and Housing Developments. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour.

Ask for a Demonstration—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 621.



BARCO *Manufacturing Co.*

514D Hough Street • Barrington, Illinois

information about the specific rooms, large-scale plans were drawn of an individual room, and various fabrics used to identify beds, chairs, other furniture and furnishings.

In addition, a three-dimensional contour model was built of the site with miniatures of the existing and proposed structures. Braille labels, made by the blind themselves, were pasted on the model and plans, to identify various features.

Mrs. Eleanor Harrison, president of the blind organization, is shown with Robert Snow examining the model.

A Parachute Harness Goes to the Rescue

A parachute harness is used by City Light crews at Tacoma, Wash., in a new procedure developed to rescue a stricken man from one of the downtown underground vaults, in case of accident.

In most cases the first step in aiding the "victim" is to restore normal breathing by the application of artificial respiration before any attempt is made to move him.

The moving job, in which the man must be in an upright position to pass through the manhole opening, must be a fast one. The patient is fitted with a parachute harness which then is hooked to a rope suspended from a block and tackle attached to a ladder A frame. Crew members then lift their fellow workman onto a stretcher for transfer to the hospital. The operation takes about 30 seconds to complete.

YOUR WICKWIRE ROPE DISTRIBUTOR SUPPLIES THE ANSWERS TO WIRE ROPE PROBLEMS

One of the best ways to find out "what goes" is to be right on the spot. That's why a Wickwire distributor is a wire rope expert—he practically lives with the industries he supplies with wire rope. He knows his customers' specialized problems from first-hand experience, and is able to give competent practical advice on the best construction—6x19, 6x37, 8x19, etc.—for them to use. And he delivers the type, size and length of wire rope they need directly from his warehouse stocks. They save time . . . storage space . . . paper work.

Your Wickwire Rope distributor is a good man to know. He's quality people handling quality products. Buy your wire rope and wire rope slings from him. You'll find that the many valuable services he offers far outweigh any apparent price advantage you might gain by buying direct.

CF&I WICKWIRE ROPE A CF&I PRODUCT

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READ WHY SO MANY CONTRACTORS SPECIFY BOSTON HOSE AND BELTING

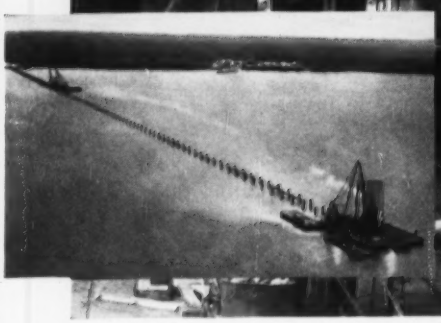
How to avoid next month's downtime ...now!

BREAKDOWNS ON ANY CONSTRUCTION JOB ARE COSTLY AND TIME CONSUMING. Contractors simply can't afford to take chances. That's why so many specify Boston hose and belting. They know Boston products have been used—*and proved reliable*—on the biggest, toughest construction jobs . . . jobs like the Lake Pontchartrain Causeway project.

BOSTON SPECIALIZES IN INDUSTRIAL RUBBER PRODUCTS. It's not just a sideline. Boston Woven Hose & Rubber Co. has one aim: to keep right on developing industrial rubber products that will outperform all others on the job.

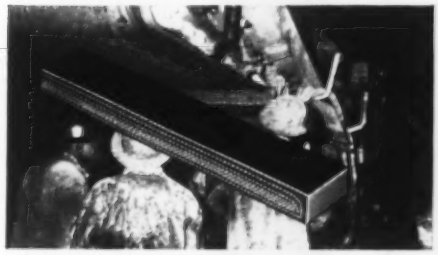
YOUR BOSTON DISTRIBUTOR GIVES YOU FAST SERVICE—immediate delivery when you need it, because he anticipates your needs, prepares to meet them. He's the Boston Man in your area, an expert in industrial rubber products with a thorough knowledge of construction. Why not call him today?

HERE'S PROOF OF BOSTON PERFORMANCE: On the $46 million Lake Pontchartrain Causeway project, Boston Jetting Hose and Pile Driver Steam Hose proved rugged and dependable by driving more than 4600 mammoth piles (each 96 feet long and 67,200 pounds) to help build the 24-mile span.

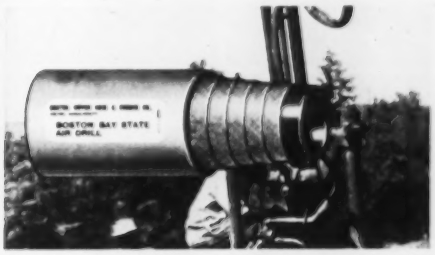


INDUSTRIAL HOSE • FIRE HOSE • BELTING

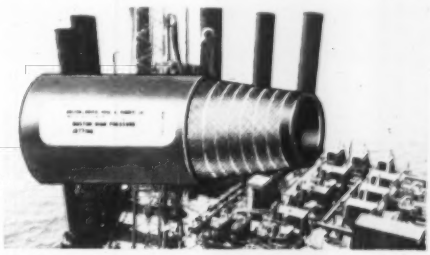
BOSTON CHECKLIST FOR YOUR HOSE AND BELTING REQUIREMENTS



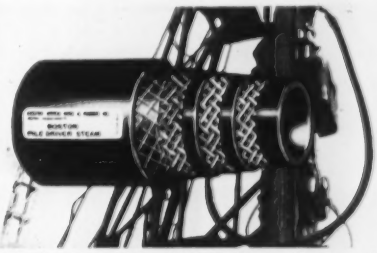
BOSTON MUCKER BELT: Reduce your maintenance costs as much as 34% with Boston Mucker Belt. It simply does not stretch—even after thousands of yards of solid rock. Contractors using Boston Mucker Belt often report replacing worn-out metal hinges seven and eight times *in the same holes!*



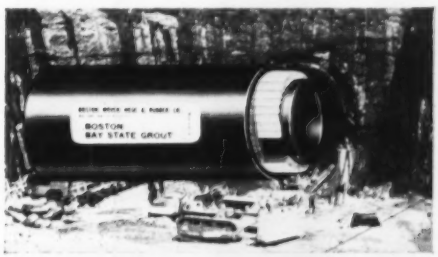
BOSTON AIR HOSE: For pneumatic tools, Boston has a specific hose for every use—from chippers to pile drivers. On heavy duty jobs most contractors use Boston's wrapped fabric hose (shown) or Boston's wire reinforced hose. Both offer long service life, unusual flexibility.



BOSTON WATER HOSE: As much as 72% more durable than other hose on tunnel, dam and bridge construction, Boston water, suction and jetting hose (shown) are tailor-made for every kind of construction job. That's why Boston water hose is dependable even when the going gets rough.



BOSTON STEAM HOSE: Your Boston Man has a complete line of pile driver hose, from 1½" to 2½". Every hose is specially designed to resist rough hammer action and deterioration caused by steam and oil. Boston also offers a wide selection of rugged hose for general steam service.



BOSTON CONCRETE HOSE: Boston's hose for handling cement, concrete and grout is engineered for long use under the toughest conditions. Boston Concrete Placing Hose and Bay State Grout Hose (shown) proved their worth on key projects like Queens Midtown Tunnel and the Delaware Aqueduct.

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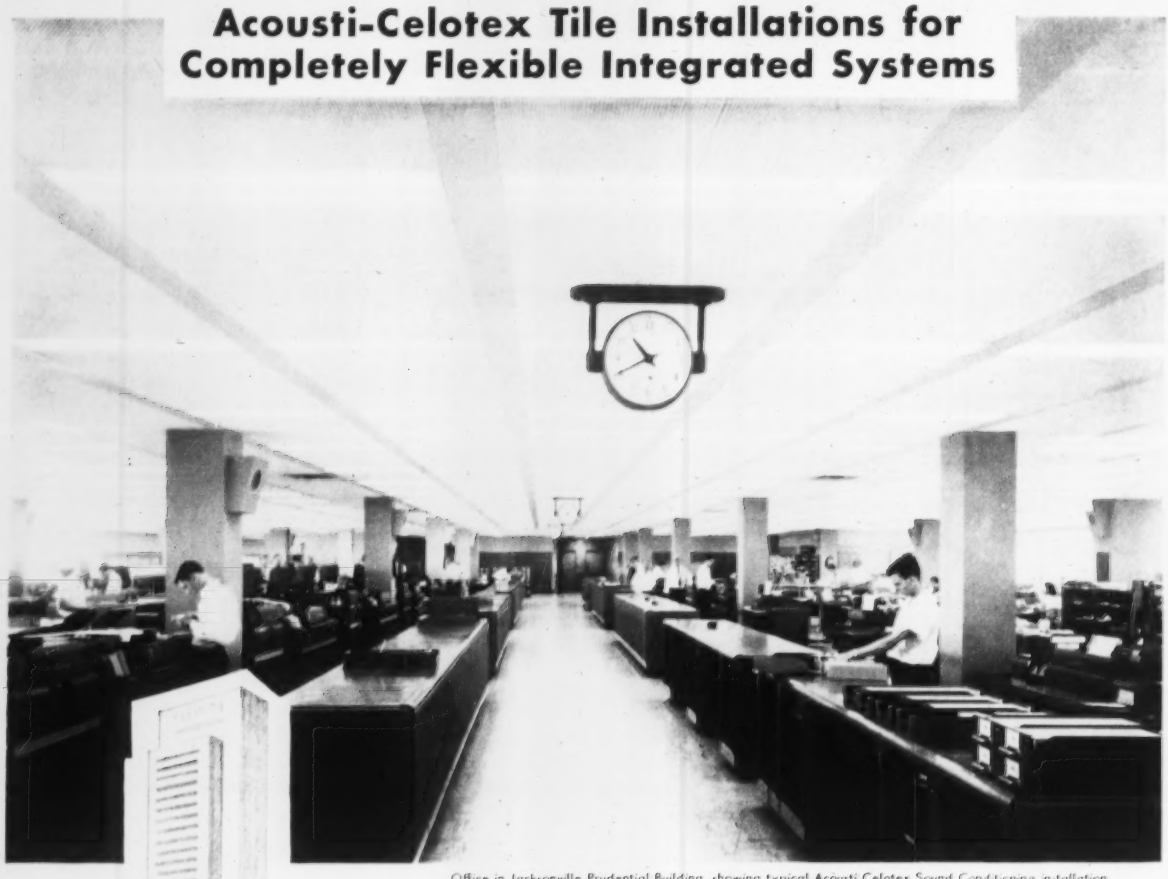
New Prudential Buildings' Ceilings Feature

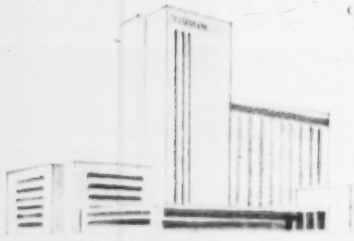
Acousti-Celotex Tile Installations for Completely Flexible Integrated Systems



Office in Jacksonville Prudential Building, showing typical Acousti-Celotex Sound Conditioning installation

Prudential's South Central Home Office
Jacksonville, Florida
General Contractor: Daniel Construction Co.
Architects: Kemp, Bunch & Jackson

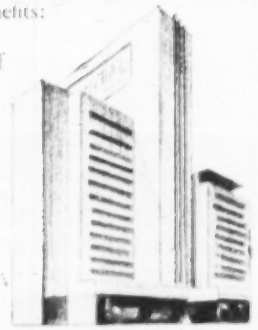
Included in the Acousti-Celotex Sound Conditioning installations of the beautiful and nationally-acclaimed Prudential Buildings . . . were more than 1,000,000 square feet of incombustible Acousti-Celotex Perforated Mineral Tile, Celotone® Tile, and Acousteel® metal pan. The Acousti-Line® Suspension System, on which Acousti-Celotex Tile was installed, offers two additional functional benefits: Complete flexibility of ceiling units . . . tile, lights, air diffusers, etc. . . . permits interchanging for unlimited variety of office layouts and arrangements. And easy access is provided to above-ceiling areas for servicing of lights, wires, ducts, plumbing, other utilities.



Prudential's North Central Home Office,
Minneapolis, Minnesota
General Contractor: Haglin and Sons Co.
Architects: Magney, Tusler & Setter

Here's One Contract You Simply "Let and Forget!"

Sound Conditioning was supplied by three different Acousti-Celotex distributing organizations, working with three general contracting companies and three architectural firms. 30 years of sound engineering experience makes the Acousti-Celotex distributing organization invaluable to the general contractor. When you award a sub-contract to your Acousti-Celotex distributor, you may be sure you can "let it and forget it." On any acoustical problem whatever . . . contact your Acousti-Celotex contractor.



Prudential's Southwestern Home Office, Houston, Texas
General Contractor: W. S. Bellows Construction Corp.
Architect: Kenneth Franzheim

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Sound Conditioning

Products for Every Sound Conditioning Problem—The Celotex Corporation, 120 S. LaSalle St., Chicago 3, Illinois • **In Canada:** Dominion Sound Equipments, Ltd., Montreal, Quebec.

TVA's Chairman Vogel and Chief Engineer Blee ponder . . .

Hydraulic Problems of Record-High Lock

The 100-ft single-lift lock planned for Wilson Dam by the Tennessee Valley Authority presents some knotty hydraulic problems that will be worked out in model studies at TVA's laboratory in Norris, Tennessee.

Before a lock, planned as the world's largest, can be built to replace four obsolete lifts at the Muscle Shoals (Ala.) dam, a 1/24th scale model will be built. And in the photo above, General Herbert D. Vogel and C. E. Blee discuss a test that is to help determine design of the complete scale model. The lock model will be large enough to accommodate barge models 20 ft long.

The proposed Wilson lock—now under design as well as model study—will have inside dimensions of 110-ft width and 600-ft length. It will be capable of passing more speedily and efficiently the 2,000,000 tons of shipping per year now passing Wilson Dam.

Typical of the hydraulic problems to be solved with the help of the model, the device in the photo above represents ports through which the planned lock might be filled. Size and shape of the openings can be studied and modified on such a model as this to reduce turbulence in the lock, should it prove to be excessive. Other tests to be made are expected to determine the use of the dam's sluices for filling the lock, velocities of flow through the lock, time for filling the lock, and controls of its gates and machinery.

100-Ft Bridge Will Be Tested To Close Gaps in Knowledge

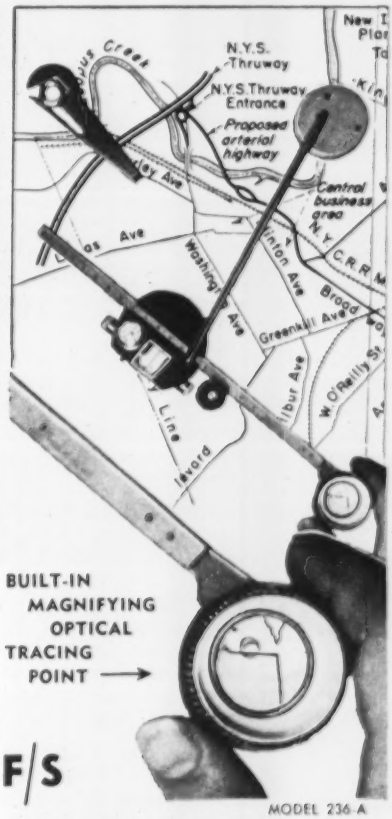
A 100-ft-span steel truss bridge 16 ft high and 20 ft wide, will be built at Northwestern University, Evanston, Ill. for research on truss members and connections. The bridge will be supported on concrete caissons, and loading will be applied at panel points by hydraulic jacks anchored to the caissons.

The structure will be constructed of high-strength low-alloy steel joined by high-strength bolts. The researchers—members of the civil engineering department of Northwestern Technological Institute—will study the bridge by replacing one or more of the members with ordinary structural steel. In this manner, they will be able to measure the effects of load to the point of failure on the ordinary steel members. Other parts of the bridge will not be damaged.

In like manner, the connections will be studied. Here, ordinary rivets will be used at the joints that are to be investigated to failure.

The full-scale bridge is part of a $250,000 research project supported

GOODBYE EYESTRAIN!



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- Enclosed wheel carriage keeps out dust and maintains high precision—incorporates plexiglas lens to simplify wheel readings.

Model 236A—(Illustrated) Adjustable-arm Planimeter $75.00

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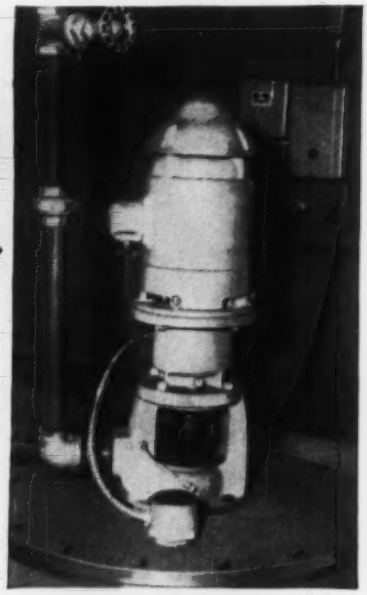
Solution

for a "PACKAGE" of Pump Problems



One of six Deming Turbine Pumps in condensate return service at The Morgan Engineering Company, Alliance, Ohio.

Deming Turbine Pumps

Plant engineers at The Morgan Engineering Company, Alliance, Ohio, leading manufacturer of cranes, presses and steel mill equipment, had a "package" of pump problems.

The Job was pumping hot condensate from steel sumps for return to steam boilers.

The Equipment included four obsolete condensate pumps with 3 HP electric motors and float controls.

The Problem was the failure of the original equipment to meet the job requirements efficiently and economically. Proper lubrication of the pump bearings was found impossible to provide. Frequent replacements of bearings and impellers was necessary. Float equipment gave almost constant trouble due to surges of steam. Here was a "package" of problems.

The Solution started by calling in the local Deming Distributor. Working "elbow to elbow" with the plant engineers, it was decided that Deming Vertical Turbine Pumps offered definite advantages.

1. The Deming Vertical Submerged Pumps with floatless controls eliminated the former float control troubles.

2. Only 2 HP electric motors were required by the Deming Turbine Pumps. The former condensate units required 3 HP motors.

3. Trouble in lubricating the bronze bearings of the condensate units was eliminated. Deming Turbine Pumps are self-lubricating (with the water flowing constantly through the pump when operating).

4. Using 1/3 less horsepower, the Deming Turbine Pumps did more work with a minimum of maintenance and at considerably less overall cost of operation.

Ask your nearest Deming Distributor or write us for a free copy of illustrated BULLETIN 4700 on Deming Vertical Turbine Pumps.

THE DEMING CO. • 536 BROADWAY • SALEM, OHIO

CALL YOUR DEMING DISTRIBUTOR for help on pumps!

by the university, industry and government. Financial support has been pledged by the Association of American Railroads, the U. S. Army, and the Bureau of Public Roads.

Inland Steel Co., Chicago, will provide the steel for the bridge, which will be fabricated and erected by Wisconsin Bridge and Iron Co., Milwaukee. Foundations designed by Paul Rogers and Associates, Chicago, will be constructed by Case Foundation Co., Roselle, Ill. High-strength bolts are supplied by Russell, Burdsall, and Ward Bolt and Nut Co., Port Chester, N. Y.

Gold-Colored Aluminum

Building designers seeking a gold-colored metal for wall panels may find the answer in an alloy cladding for aluminum that has been produced experimentally in the laboratories of Kaiser Aluminum & Chemical Corp.

No dyes are used. The color of the alloy is that of aluminum until it is anodized, when it turns to gold. Tests show that the color is relatively nonfading and the surface is corrosion resistant.

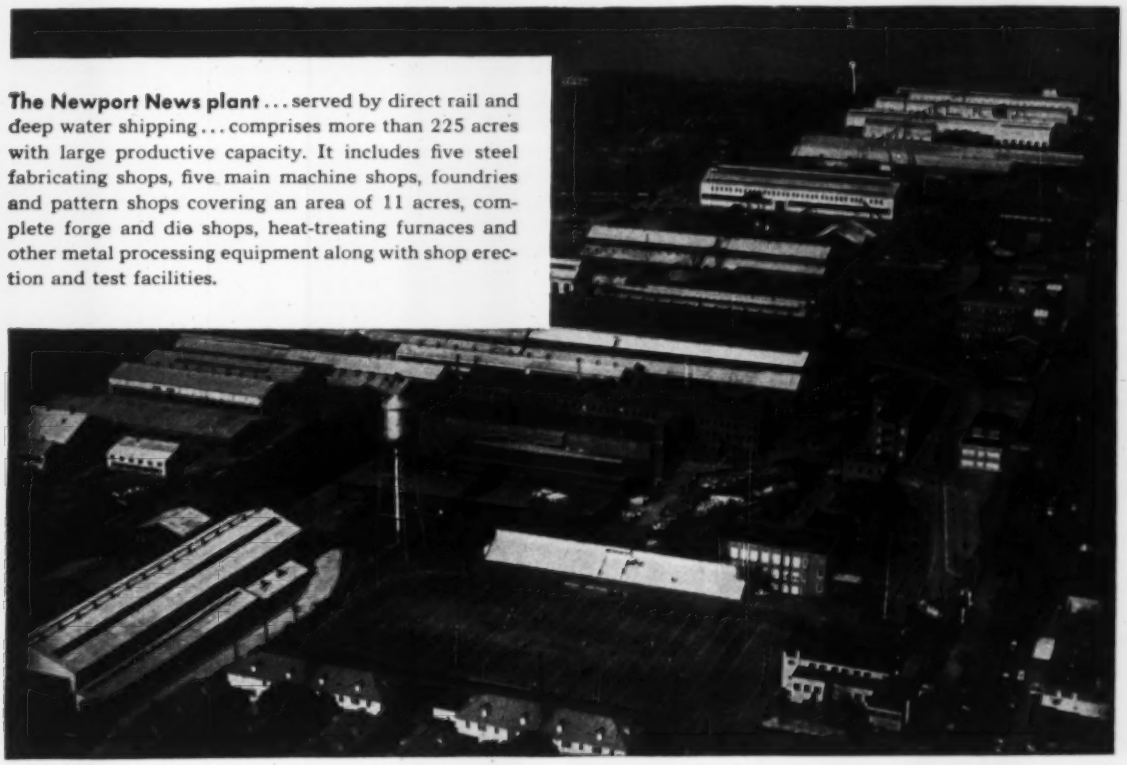
Obituaries

Frank N. Calvert, 78, Louisville, Ky., civil engineer and formerly connected with the U. S. Army Corps of Engineers on Construction of dams, died Feb. 19. Prior to his retirement in 1947, Calvert served with the Kentucky highway department and the Illinois highway department.

Louis H. Haupt, 66, retired project engineer in the design division of E. I. du Pont de Nemours and Co., Wilmington, Del., died Feb. 24. He was a 1909 graduate of the University of Pennsylvania, where his father, Lewis M. Haupt, was professor of engineering for 30 years.

Jean B. Jacques, 72, consulting engineer with the U. S. Army Ordnance Corps since 1950, died Feb. 23, Philadelphia. One of the pioneers of E. G. Budd Co., Jacques fabricated the first all-steel automobile body for the company in 1912.

Alexander S. Deserty, 77, retired consulting engineer who designed the Ritz Tower, New York, died Mar. 3. A native of Rome, Deserty also designed the New York State Building at the Panama-Pacific International Exposition, San Francisco and many other buildings throughout the United States.



The Newport News plant ... served by direct rail and deep water shipping ... comprises more than 225 acres with large productive capacity. It includes five steel fabricating shops, five main machine shops, foundries and pattern shops covering an area of 11 acres, complete forge and die shops, heat-treating furnaces and other metal processing equipment along with shop erection and test facilities.

Make Newport News

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Let Newport News fabricate your weldments or sub-assemblies. Call on us for plate fabrication...from vacuum tanks to bridge caissons ... for pumps, valves, pipe lines ... you'll find that Newport News fabricates parts to answer most demands.

In the vast plant, shown above, Newport News craftsmen complete your orders with specialized production techniques, and with sound experience acquired through construction of thousands of products ranging from small components on rayon spinning machines, to the giant 165,000 hp hydraulic turbines at Grand Coulee.

See for yourself what Newport News is doing, and how this company's high integration of skill and production facilities can help you. Get the facts, shown in *Facilities and Products*. A copy of this illustrated booklet is yours for the asking ... write for it now.

Newport News
Shipbuilding and Dry Dock Company
Newport News, Virginia

BEFORE: Condition of pavement on Broad Street prior to treatment.

AFTER: Treated pavement after being open to traffic for one month.

A Tough Job: Seal main street without traffic tie-up

Here's how it was done with BITUMULS® in Richmond, Virginia

BROAD STREET, the main artery in Richmond, Virginia, carries the combined truck and automobile traffic of Routes 1, 301, 250 and 33.

Under a load of more than 40,000 vehicles per day, sections of the existing pavement were raveling at an alarming rate. Full width plant-mix resurfacing would have put the surface too high on the curb line. Digging out the old pavement would prove too costly.

The problem was reduced to this: ***seal the street without traffic tie-up, and without bleeding, flying stone, or other inconveniences to the public.***

Based on many years' experience with Bitumuls, the City Maintenance Forces, headed by H. F. Phillips, Chief, and Dick Kelley, Superintendent, worked out their problem with E. P. Asbury, of the City Construction Department.

The job was put in the hands of W. M. Allnutt, Chief, Construction Division, and Col. A. P. Fulton. Cutting and patch work was let under contract to a local firm, with traffic carried through and around the work.

Sealing was done by the City Maintenance Crew in the following manner: Early on Sunday, between 6:00 a. m. and 11:00 a. m., 9,000 gallons of Bitumuls (quick-setting emulsified asphalt) was applied on the south side of the street at the rate of 0.3 gal. per sq. yd. This was covered by 15 lbs. per sq. yd. of No. 7 Maryland slag.

Controlled application of Bitumuls asphalt emulsion was followed by the placement of cover aggregate. The surface was then rolled.

Traffic was diverted to the north side of the street, but the south side was opened to traffic at 1:00 p. m. The north side of the street was done in a similar manner early on a week-day morning of the following week.

The results: excellent! Along the entire 1.57 miles of 72.4 ft. roadway there was no softening or bleeding of the fresh seal. No pick-up was experienced, even at open intersections. All work was broomed clean and watered, if necessary, the following day to eliminate dust. Costs were remarkably low.

This is just one of the ways in which Bitumuls has helped to solve pavement problems for cities and towns throughout the country. *When you have a "tough job," contact our nearest office.*

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Inglewood, Calif. • Oakland 1, Calif. • San Juan 23, P.R.

Men and Jobs

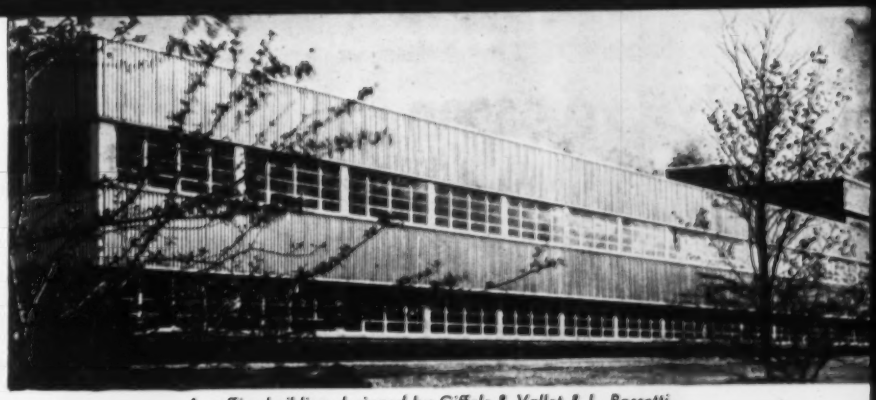
P. F. Pape

Charles DuBose

F. H. McGraw & Co. Names Two New Vice Presidents

Paul F. Pape, an engineer, and Charles DuBose, an architect, have been elected vice presidents of F. H. McGraw & Company, engineers and constructors with headquarters in Hartford, Conn.

Since joining McGraw in 1946, Pape has served as chief engineer and project manager, and will now be in charge of engineering. His work with the firm has included a four-year assignment in Paducah, Ky., on the $1 billion atomic energy plant for which

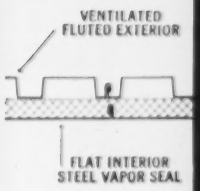


An office building designed by Giffels & Vallet & L. Rossetti, Associated Engineers and Architects, Detroit.

3 Good Technical Reasons For Specifying Robertson Q-Panels

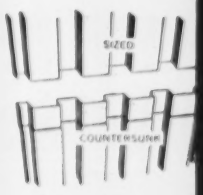
1

Continuous Sealed Joints The interlocking side lips on both the inner and outer surfaces of the panels are caulked to provide a continuous sealed joint. Thus, when the panels expand or contract, the joints do not separate but remain in contact with the caulking material. This efficient side joint effectively maintains the insulation qualities of the wall and prevents the infiltration of air, dirt and moisture.



2

Flush Lap Joint Special conditions often make end-joints unavoidable. All standard Robertson Q-Panels are die-set and countersunk at the end lap, producing neat, almost invisible joints, with full insulation at that point. This feature eliminates the inefficient butt-joint with its unattractive through-wall flashing and consequent insulation loss.



3

Efficient Insulation The U-Value of an M-Type Q-Panel wall is .125 BTU per sq. ft. per hr. per °temp. diff., F. This was established by careful tests made at one of the nation's leading industrial research laboratories. Special attention was given to thermal conductivity at all critical points along the wall and the established U-Value is an average over a stretch of wall involving several side laps. Use the coupon to write for details.

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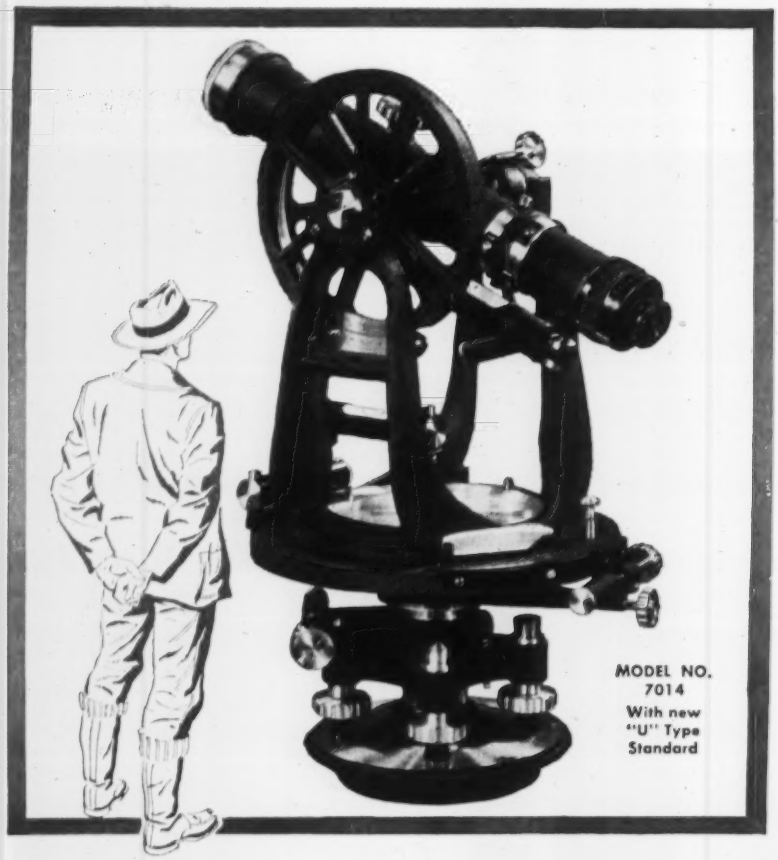
NEW FEATURES

on the WHITE Engineers' transit



YES, the White Engineers' Transit is a fine engineer's instrument — now made even finer with the addition of *covered leveling screws* and *coated optics*.

Covered leveling screws assure you of smooth, easy, precise leveling at all times, under all kinds of conditions for the life of the instrument itself.

Coated optics guarantee clear, sharp, accurate images — without halation, at longer distances, even under adverse conditions.

Compare the David White Engineers' Transit with all others—feature for feature — price for price. Compare them for accuracy — long durability — built-in quality. To meet your preference, this instrument is available with "U" or "A" type standards. You'll find you'll buy right when you buy a David White.

Contact our nearest dealer for complete details of the David White Engineers' Transit and for other fine Engineering Instruments—or write direct to David White, 317 W. Court St., Milwaukee, Wis.

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he was project manager during the final stages of construction.

Pape worked on military installations during the war in Newfoundland, Labrador and Greenland, as well as on the Oak Ridge atomic plant. Later, he served on a number of foreign misisons which had to do with both rehabilitation and construction programs.

DuBose, who will supervise operations of the company's Canadian subsidiary in Toronto, has been in architectural practice in the New York area since 1933. A graduate of Georgia Tech and the University of Pennsylvania, he came to the McGraw organization from Frank Grad & Sons, Newark, N. J., architectural firm.

New Highway Commissioner Appointed in Vermont

William Poeter has been appointed Vermont state highway commissioner, effective April 1. He will succeed Paul H. Gates, who plans to resume active management of his telephone and power companies at Franklin, Vt.

Before establishing his own plumbing, air conditioning and heating firm in Brandon, Vt., in 1953, Poeter spent nearly two decades in the engineering and construction field.

He started his career with P. Ballantine & Sons of New Jersey in 1933 and returned to them after the war as design project engineer. During the war, he was in the design department of M. W. Kellogg Construction Co. of New York, working in California, New York and Iran, and later went to South Africa for the company. His post-war experience has also included work as area engineer for an oil refinery in Ponca City, Okla.

William Poeter

Richard Haber Is Named State Highway Engineer

Richard A. Haber returned to the Delaware State Highway Department last week as chief engineer—a post he left in 1953 to join Michael Baker, Jr., Inc., consulting engineers in Rochester, Pa. He is simultaneously serving as chief engineer for the Interstate Highway Division, which controls the Delaware Memorial Bridge.

Intermittently associated with the department since 1936, Haber has served as laboratory technician, draftsman, design engineer and division engineer. During construction of the Delaware Memorial Bridge, he was assistant to the director of the Delaware River Crossing Department, and in 1951 became chief engineer of the highway department.

In addition to his service with the Baker firm as vice president and executive engineer, Haber has been a project engineer for General Engineers, Inc., Parksly, Va. His World War II service in the army included work on roads, airfields and docks in Alaska, the Aleutians, China, Burma and India.

Active in many professional organizations, including ASCE and AASHO, Haber has been director of both the Delaware Safety Council and the Greater Pennsylvania, New Jersey and Delaware Development Council.

Men and Jobs Briefs . . .

• **Associations**—The Associated Builders and Contractors of Maryland elects **J. Roland Stolzenbach,** of the Roland Electrical Company, Baltimore, as president . . . **Theodore T. Pantalei,** director of public works for Anne Arundel County, Md., is named president of the County Engineers Association of Maryland.

• **Business**—The A. C. Lawrence Leather Co., Peabody, Mass., appoints **Andrew M. Ives** as chief engineer of all plants . . . Seevle Stevenson Value & Knecht, consulting engineers located in New York, makes **Samuel C. Bast** an associate of the firm . . . **Gordon C. Snyder** rejoins W. C. Nickum & Sons, Seattle architects and engineers, as chief of design.

• **Honors**—**George C. Hanson** of Denver, engineer with Phillips, Carter, Osborn, Inc., received the highest award at the fifth annual Building Industry Conference at the University of Colorado. Hanson was cited for his outstanding work in the development of prestressed concrete.

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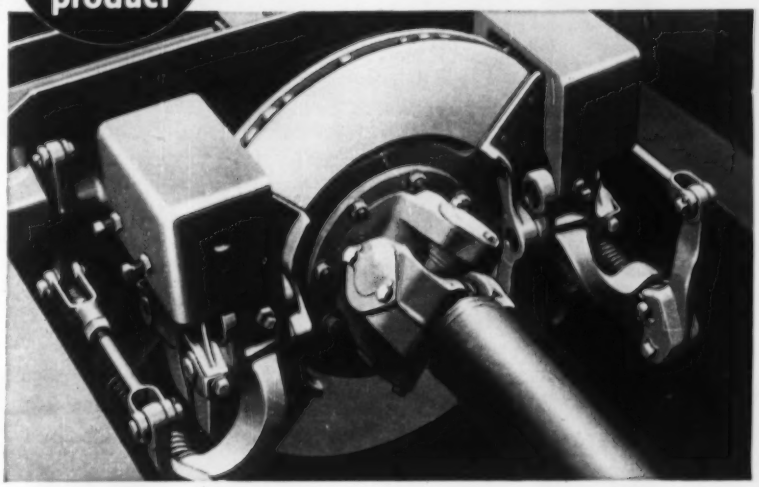
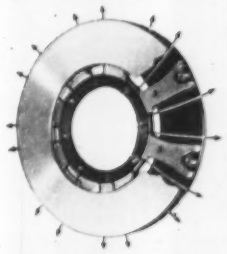
It Pays to Specify TRU-STOP Brakes



because they give you Real Emergency Braking...Smooth, Positive Stops...Safe Parking... and Lower Service Costs



Longer Lining Life

• The terrific heat generated in braking cuts lining life. TRU-STOPS quickly dissipate this heat. Most of the disc is exposed to the air even during braking. And a cooling jet of air circulates through the disc, prolongs lining life.

Real Emergency Braking. TRU-STOPS *are real emergency brakes—not just "parking brakes."* They serve as auxiliary brakes on long down-grades and can bring the vehicle to a smooth, quick stop if service brakes suddenly fail.

In fact, TRU-STOPS can do this and more. They can handle the vehicle with safety so it can be removed from the road.

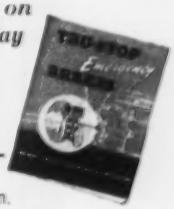
Smooth, Positive Stops. Pressure is in direct proportion to the pull on the brake lever. There is no dangerous self-energizing or "over-braking."

Safe Parking. TRU-STOPS hold on grades—prevent "parking brake" accidents.

Lower Service Requirements. TRU-STOPS are mounted directly on the drive shaft. Their simplicity of design and accessibility reduce maintenance requirements. Relining or adjustment is a simple job for any mechanic with ordinary tools. It is not necessary to drop drive shaft.

Specify TRU-STOPS for factory installation on your next vehicle.

This Booklet gives the complete story on TRU-STOP Brakes. Send for your copy today



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Ford saves you money with

YOU SAVE ON PARTS REPLACEMENTS—*add miles to engine life!*

YOU SAVE ON SHOP LABOR—*cut maintenance to the bone!*

YOU SAVE ON YOUR ORIGINAL INVESTMENT—*get more work done per truck!*

Ford Trucks for '56 save you money right from the start. And, they keep on saving with their extra-sturdy, long-life engine design.

For instance . . . Ford Engineers have now introduced into all heavy-duty engines the greatest valve advancements ever. As an example, see the exhaust valve in diagram on right page. The valve stem is hollow and partially filled with powdered sodium. When the sodium gets hot, it *turns into a liquid.* As it moves up and down, it carries heat away from valve head—*allows it to operate up to 225° cooler!* Result: a cleaner-running, more burn-free, longer-lived valve face.

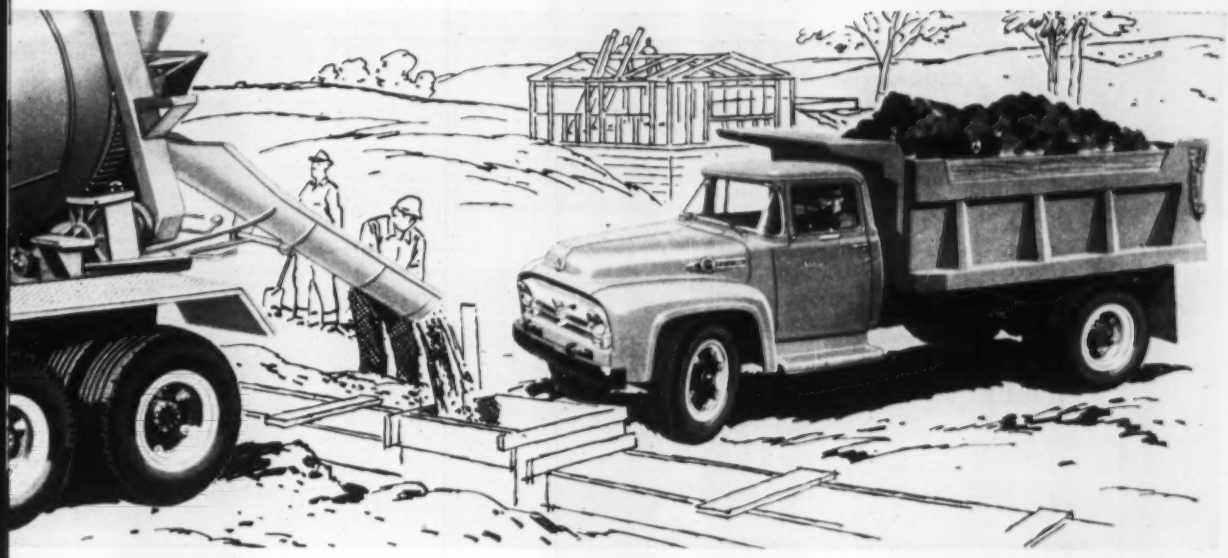
Ford's long-lasting engine design pays off for you in every way. You save money on parts replacements such as piston rings and bearings. You save on shop labor—extend time between preventive maintenance jobs like valve adjustments, valve grindings, compression tests, ring jobs and the like.

And you can save on driver costs if you can keep trucks out of the shop and on the road. Yes, you save in every way when you get more work done per truck!

There's a Ford Truck for every trucking job. Before you buy your next truck, Test Drive a Ford Economy Truck.

FORD TRUCKS LAST LONGER

Certified by independent insurance actuaries for the ninth consecutive year! Studies of over 10,068,600 current license registrations show that Ford Trucks last up to 9.9% longer than any of the other 4 leading truck makes!



F-900—GVW 29,000 lbs.; GCW 60,000 lbs.

new long-life engine design

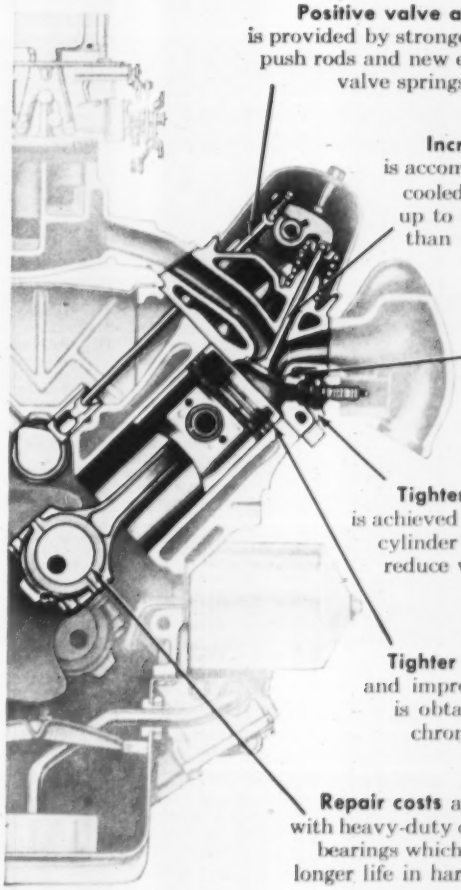
Hauls up to 3000 lbs. more than other 6-wheelers—New Ford T-800

● New power and hauling capacity of the Ford Tandem BIG JOB cuts hauling time on every run—makes giant cargos seem lightweight. You have a choice of two gas-saving Short Stroke engines. Either the 190-h.p. *Torque King* V-8 or, the 200-h.p. *Torque King* Special V-8.

You have new engine advancements for longer life (some explained and illustrated at the right).

New high-capacity tubeless tires, heavy-duty 5-speed transmission and Power Steering are standard equipment, at no extra cost. Two 3-speed auxiliary transmissions and full-air brakes are available at low extra cost.

New *Driverized* Cabs for driving comfort and convenience have *Lifeguard* Design safety features found in no other truck. Lifeguard steering wheel helps protect driver from steering column; Lifeguard door latches help keep doors from jarring open in case of accident.



Positive valve action is provided by stronger, tubular push rods and new equal-coil valve springs.

Increased valve life is accomplished with sodium-cooled exhaust valves—up to 225° cooler-running than solid-stem valves.

Longer valve and seat life are the result of solid tungsten-cobalt alloy facings and exhaust valve seat inserts.

Tighter valve closing is achieved with stress-relieved cylinder heads that help reduce valve distortion.

Tighter compression seal and improved ring durability is obtained with thicker chrome-plated rings.

Repair costs are lower with heavy-duty copper-lead bearings which provide longer life in hard service.

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. FELIX, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† Connecticut—BA 3/20—U. S. Eng., 150 Causeway St., Boston 14, Mass., stone jetty at mouth of Patchogue River, Westbrook, Serial No. CIVENG-19-016-56-106. CD 11/9.

† R. I., Quonset Point—SANITARY SEWER—BA 3/20—Dist. P. Wks. Office, Bldg. 438, U. S. Naval Air Station, Quonset Point, replacement 24 in. sanitary sewer between Manhole No. 60 and Manhole No. 62 at U. S. Naval Air Station, NBy-56, NavDocks Spec. No. 56/56. Plans deposit $10.

† Maine—BA 3/22—U. S. Eng., 150 Causeway St., Boston 14, Mass., imprvt. dredging Hendricks Harbor, Southport, Serial No. CIVENG-19-016-56-108. CD 11/9.

▲† Massachusetts—BA On Or About 4/12—U. S. Eng., Div. Eng., 150 Causeway St., Boston 14, Mass., Barre Falls Dam, Ware River, towns of Barre, Rutland, Hubbardston and Oakham in Worcester Co., CIVENG-19-016-56-103. $1,500,000-$2,000,000. CD 3/22/45.

BUILDINGS—BA

Mass., Hingham—SCHOOL—BA 3/29—Town Bd. Selectmen, Town Hall, Foster School addn., Downer Ave. $345,000. Plans deposit $50. Edward T.-P. Walker & Theodore B. Hanna, 131 State St., Boston, archts. CD 2/23.

▲ R. I., Coventry—HIGH SCHOOL—BA 4/5—Town, Henry J. Cooper, supt. Schools, High School, Hopes Rd., high school, Foster Site-Anthony Area, $1,250,000. Plans deposit $100. Gardiner & Mather-Patriarca & Nye, 170 Westminster St., Providence, archts. Carl J. Malmfeldt & Assoc., 36 Pearl St., Hartford, Conn., assoc. archts. CD 6/30.

HEAVY CONSTRUCTION—LB & CA

▲† Robert A. Verrier, 65 Commercial St., Portland, Me., LB $4,279,353. Special AAA Facilities, Limestone, Caswell, Caribou and Conner, MAINE. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Mar. 1. CD 2/13.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

Peter Salvucci & Sons, Inc., 55 Pond St., Waltham, Mass. CA $728,640, hy. relocation, Route 2, F-348 (1 Orange. Bids Jan. 24. CD 1/30, under LB.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

J. F. White Contg. Co., Box 202, Westwood, Mass., CA, $2,633,633, est. $2,891,738, hy. relocation Route 3, Bourne-Plymouth. Bids Jan. 14. CD 2/21, under LB.

V. F. Capaldi Constr. Inc., 63 Observatory Ave., Providence, R. I., LB $759,781, est. $750,000 sanitary sewerage sys., JOHNSTON, R. I. Town, Sanitary Dist. Comm., Town Hall, Johnston, R. I. Bids Feb. 27. CD 2/13.

▲ CONNECTICUT—State Hy. Comn., Hartford, Conn.—A. J. Orlando Contg. Co., 151-59 Powell's Cove, Blvd., Whitestone, N. Y., and Edenwald Contg. Co., 151-45 Sixth Rd., Whitestone, N. Y., CA $7,436,751. Proj. 309-02, grading, drainage, c. conc., incl. grade separation structures at Kings Hy. East and West, Meadowbrook Rd., Grasmere Ave., New England Ave. Exten., Sunset, Black Rock Aves. Structures A and B, Chambers St., Brentwood Ave. and relocated Coolidge St., Fairfield.

Conn.—Gulf Contg. Co. Inc., 33-15 Lawrence St., Flushing, N. Y., CA $10,186,307. Proj. 304-02, c. conc. 7,100 lin. ft., incl. grade separations structures at Greenwich Ave. and Rippowam River, McCulloch St., South and Guernsey Sts., Atlantic St., Canal St., Hawthorne St., Elm St., Lafayette St., N. Y., N. H. and H. R. R. and Myrtle St., Stamford. Bids Feb. 6, awarded Feb. 27. CD 2/8, under LB.

▲ CONNECTICUT—State Hy. Comn., Hartford, Conn.—Cauyga Foundation Corp., 30 Vesey St., New York, N. Y., CA $7,281,878, Proj. 310-01, c. conc. 8,482 lin. ft. incl. ramps, frontage roads, grade separation structures, State St. Exten., Fairfield, Hancock, Howard and Wordin Aves., incl. substructures for viaducts at Burr and Cherry Rds. and South Ave., Fairfield and Bridgeport.

Conn.—Slattery Contg. Co., Inc., 47-36 54th Road Maspeth, N. Y., CA $7,336,147, Proj. 302-02, c. conc. 13,787 lin. ft., incl. 8 grade separations, at River Ave., James St., Delavan and Ritch Aves., Field Point, Shore Rds., Arch St. and Steamboat Rd., 2 drainage structures at Horseneck Brook in Greenwich Harbor on Field Point Rd., both Connecticut Turnpike, Greenwich. Bids Feb. 14, awarded Feb. 29. CD 2/16, under LB.

▲† Frouge Constr. Co., Inc., 141 North Ave., Bridgeport, Conn., LB $1,039,520, Special AAA Facilities, Monroe and Sheldon, ENG-19-016-56-98, CONNECTICUT. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Feb. 2. CD 2/17.

† Harmel Constructors, Inc., 350 5 Ave., New York, N. Y., LB $447,379, est. $250,000-$300,000 Special AAA Facilities, Fairfield, ENG-19-016-56-96, CONNECTICUT. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Feb. 28. CD 2/13.

BUILDINGS—LB & CA

▲ Vara Constr., Inc., 718 Huntington Ave., Boston, Mass., LB $1,878,000. JUNIOR-SENIOR HIGH SCHOOL, DRACUT, MASS. Town, Dracut, Mass. Bids Feb. 29. CD 2/15.

▲ Town, School Bldg. Comn., Union Ave., Framingham, Mass., rejected bids Feb. 20, HIGH SCHOOL, Walnut St., LB $3,442,000, CD 2/29, under LB; rejected bids Feb. 9, Brook-Water Elementary School, LB $1,207,210. Will re-advertise. CD 2/15, under LB, FRAMINGHAM, MASS.

▲ Grande & Son, 175 Maplewood St., Malden, Mass. LB $1,185,630, JUNIOR-SENIOR HIGH SCHOOL, Linden and Woodland Sts., HOLLISTON, MASS. Town, Fred Miller, supt. Schools, Holliston, Mass. Bids Mar. 1. CD 2/3.

Felix Buzzi & Sons, 621 Main St., Torrington, Conn., LB $660,400. two SCHOOLS, North End Park site May Rd., EAST HARTFORD, CONN. Town, School Bldg. Comn., Town Hall, East Hartford, Conn. Bids Feb. 29. CD 1/31.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† N. Y., Buffalo—MAST INSTALLATIONS—BA 3/20—Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York, Zone 7, repairs to mast installations, U. S. Naval Reserve Training Center, NOY 91896 (SF), Spec. 50306 (SF).

† N. Y., Jamestown—MAST INSTALLATIONS—BA 3/20—Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York, Zone 7, repairs to mast installations, U. S. Naval Reserve Training Center, NBy 340, Spec. 340/56.

† D. C., Wash.—BA 3/21—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, outside water distr. addn., Marine Barracks, 8 and Eye Sts. S.E., NOY 2604. Plans deposit $25.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

† D. C., Wash.—SPRINKLER SYS.—BA 3/21—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, sprinkler sys. Bldgs. 27, 49, 63 and 70, Naval Research Laboratory, NOY 88800. Plans deposit $25.

† Md., Patuxtent River—SPRINKLER SYSTEM—BA 3/21—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., sprinkler sys., Radar Laboratory, Naval Air Station, NOY 93297. Plans deposit $2.

New York—BA 3/27—The Power Auth. of the State of New York, 270 Broadway, New York, Zone 7, furnishing, del. 17 load center unit sub-stations and appurtenances, Spec. PA-5-14008, St. Lawrence Contr. No. P36, St. Lawrence Power Proj. Plans deposit $10. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/18/54.

New York—BA 4/3—The Power Auth. of the State of New York, 270 Broadway, New York 7, N. Y., rehabilitation of Massena-Taylorville Transmission line, Spec. PA-5-14033. St. Lawrence Contr. No. M3, St. Lawrence Power Proj. Plans deposit $10. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/18/54.

BUILDINGS—BA

N. Y., New York—BANK—Bids Asked—West Side Bank, 422 Avenue of the Americas, Zone 11, (selected list of builders) 2 story bank, 39-396 Avenues of Americas. $350,000. Harry P. Jaenike, 101 E. 63 St., Zone 21, archt. CD 10/17.

HEAVY CONSTRUCTION—LB & CA

▲† Great Lakes Dredge & Dock Co., 17 Battery Pl., New York 4, N. Y., LB $2,287,542 (3 bidders) dredging to depth of 37 ft. below mean low water, remove approx. 467,800 cu. yd. place measurement, all material, incl. ledge rock from New York and New Jersey channels, Sect. 4, Rock Area 8, Richmond Co., N. Y., and Union Co., N. J., work site from Upper New York Bay through Kill Van Kull and Arthur Kill, alternate route through Raritan Bay and Arthur Kill, CIVENG-30-075-56-49. NEW YORK and NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Mar. 1. CD 2/9.

M. L. Bayard & Co., Inc., 20 and Indiana Ave., Phila., Pa. CA $760,524, manufacture and furnishing 48 intake gate hoists for Barnhart Island Power Plant in St. Lawrence River Power Proj., near Massena, Contr. No. P-34, NEW YORK. Power Auth. of the State of New York, 270 Broadway, New York 7, N. Y. Bids Feb. 23. CD 2/27, under LB.

† Breoman Constr. Co., 391 E. 149 St., New York 55, N. Y. CA $864,444, Schedule I, Special AAA Facilities (FY 55) at Lloyd Harbor, ENG-30-075-56-166, NEW YORK. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Feb. 14. CD 2/16, under LB.

Lemmar Constr. Co., Inc., 232 Varet St., Brooklyn 6, N. Y. LB $89,109 (5 bidders) gas station on Bronx River Parkway exten., near Mace Ave., Bronx Boro, Contr. X-4-146-246-346-446, NEW YORK. N. Y. Comr. Parks, Dpt. Parks, The Arsenal Bldg., Central Park, 64 St. and Fifth Ave., New York 21, N. Y. Bids Feb. 29. CD 2/20.

S. T. G. Constr. Co., Inc., 82 Beaver St., New York 5, N. Y., LB $144,170 (5 bidders) Contr. 2898, constr. road over railroad tunnel portal at St. George Ferry Terminal, Richmond Boro, ST. GEORGE, N. Y. Comr. Marine & Aviation, Pier 1, North River, New York, N. Y. Bids Mar. 1. CD 2/23.

† Michael Constr. Co., 142 19 St., Brooklyn, N. Y. CA $709,707. Special AAA Facilities, vicinity of Hanover, Morristown, NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Feb. 16. CD 2/20, under LB.

Bethlehem Steel Co., E. 3 St., Bethlehem, Pa., CA $607,497, purchasing 3,900 tons steel sheet piling and accessory steel for use in constr. of new $7,000,000 Pier 11, at Brooklyn Port Authority Piers, BROOKLYN, N. Y. Port of New York Auth., 111 8th Ave., New York, N. Y. Bids 2/28. CD 2/24.

BUILDINGS—LB & CA

Rudin Constr. Co., 371 E. 135 St., New York 54, N. Y. LB $649,647, (3 bidders) general constr.; modernization and conversion of Junior High School 66 to an ELEMENTARY SCHOOL, Blake Ave., Osborne and Watkins Sts., BROOKLYN, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Mar. 2. CD 2/13.

Serene Manor, Inc., 5208 Avenue K, Brooklyn, N. Y. Owner Builds. $458,000, 28 HOUSES, 1117-1183 E. 86 St., BROOKLYN, N. Y. Mac L. Reiser, 186 Joralemon St., Brooklyn 2, N. Y., archt.

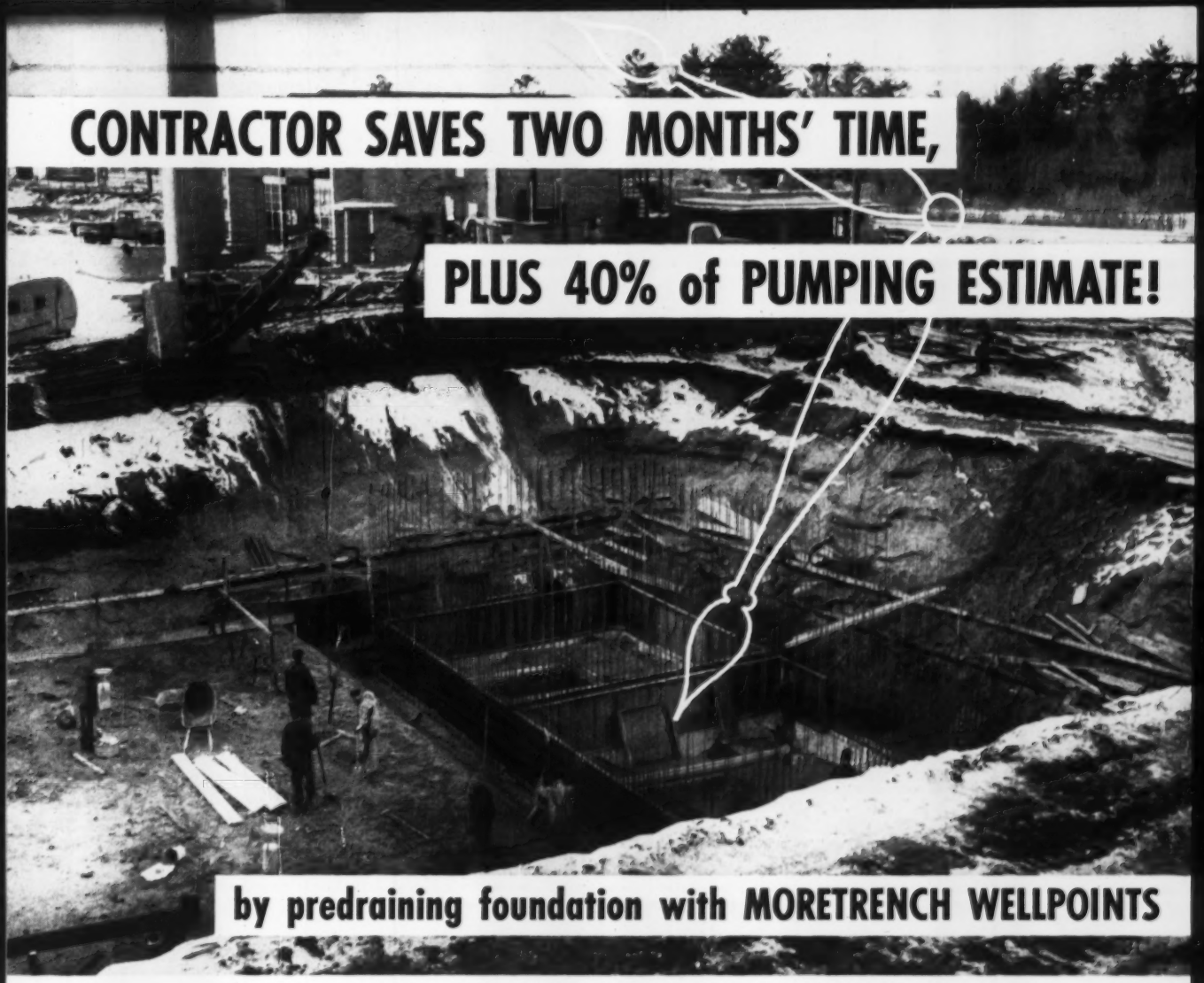
Giulio Mariani, 2705 Wilson Ave., New York 67, N. Y. Owner Builds. $620,000, 62 HOUSES, Barkley and Huntington Aves., NEW YORK, N. Y. Michael Alfano, 43 Westchester Sq., New York 61, N. Y., archt.

▲ Caristo Constr. Corp., 26 Court St., Brooklyn 2, N. Y. LB $1,937,000 (9 bidders) general constr. PUBLIC SCHOOL 111, W. 51 St. and 10 Ave., Manhattan Boro, NEW YORK, N. Y. Bd. Educ., Bureau Constr.,

(Continued from page 88)

CONTRACTOR SAVES TWO MONTHS' TIME,

PLUS 40% of PUMPING ESTIMATE!



by predraining foundation with MORETRENCH WELLPOINTS

Sewage Treatment Plant, Merrill, Wis. — Contractor: Burger & Vicker, Inc., Wausau

Before ordering pumping equipment for this job, Burger & Vicker, Inc. tested two wellpoints—*in the ground*—Moretrench and another make of wellpoint which they had been using for several years.

The MORETRENCH Wellpoint pumped 25% *more* water than the other.

That did it! Moretrench got the order. Results were immediate—and perfect. 21′ of water disappeared fast.

Here's what the contractor says: "Our pumping estimate on this job was based on our former experience with wellpoints. Using Moretrench, we finished the job *two* months earlier than anticipated at 40% less cost!"

Exceptional? No! For a time and money saver on any wet job, you can't beat a MORETRENCH WELLPOINT SYSTEM. For full details on how to pump—at a profit—contact our nearest office.

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

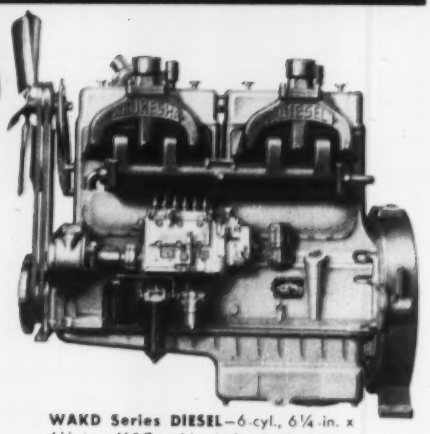
Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

HERE on the NEW YORK THRU-WAY

Morauer & Hartzell, Inc., Washington, D. C., used Waukesha Diesel powered Lorain shovels on New York Thru-Way.

...and big jobs everywhere with WAUKESHA

Diesels!



easy to start

quick to warm up

snappy acceleration

big reserve of power

high fuel economy

most economical upkeep

WAKD Series DIESEL—6-cyl., 6¼-in. x 6½-in., 1197 cubic inch displacement.

● Diesels for super duty — that keep on putting out the power! Patented Waukesha combustion chamber controls combustion to meet the needs of the job. ● Advanced design features include hardened 7-bearing crankshaft... torsional vibration dampener... heavy-duty aluminum alloy pistons, oil cooled, with chrome plated top piston rings... special alloy wet cylinder sleeves... Stellite faced valves and valve seat inserts... built-in oil cooler... thermostatic water temperature control. Send for Bulletin 1415.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES

50th ANNIVERSARY Waukesha 1906-1956

801

(Continued from page 86)

42-15 Crescent St., Long Island City 1, N. Y. Bids Feb. 29. CD 2/6.

▲ **S. S. Silberblatt, Inc.**, 25 W. 45 St., New York 19, N. Y., CA $8,719,100, general constr. and foundations St. Mary's Park HOUSES, Proj. No. NYC-26, Bronx Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Grand total $11,027,282. Bids Jan. 24. CD 1/26, under LB;
Harry Starkman & Bros., 348 Brook Ave., New York 54, N. Y., CA $657,600, heating and ventilating (NYCHA);
Simpson Electric Corp., 71 E. 116 St., New York 29, N. Y., CA $679,400, electrical work (NYCHA);
Lipsky & Rosenthal, Inc., Lexington Ave. and 115 St., New York 29, N. Y., CA $971,182, plumbing (NYCHA).

Miele Bros. Constr. Co., Monsey, N. Y. Owner Builds. $500,000, 51 HOUSES, 40-acre tract, Rte. 306, to be called Hidden Valley Estates, POMONA, N. Y. John Stone Thornley, c/o owner, archt.

▲ **Lasker-Goldman Corp.**, 50 E. 42 St., New York, N. Y. LB $3,431,000, total est. $5,000,000. general constr. 2 story COUNTY OFFICE CENTER, RIVERHEAD, N. Y. Bd. Supervs. Suffolk Co., Court House, Riverhead, N. Y. Louis Jallade, 597 5th Ave., New York, N. Y., archt., CD 1/10;
H. T. Frye, 149-12 41 Ave., Flushing, N. Y., LB plumbing (Riverhead, N. Y.);
Gecco Electric Contg. Corp., 239 Hempstead Turnpike, Franklin Square, N. Y., LB electrical work (Riverhead, N. Y.);
Noonan Heating Co., c/o owner, LB, heating (Riverhead, N. Y.).

▲ **Fred R. Brunetti Bldg. Co.**, Washington Ave. and Lilac St., Bergenfield, N. J. Owner Builds. $3,500,000. 200 HOUSES on 94-acre tract at Summit Ave. and Chestnut St., west of Route 9W, ENGLEWOOD CLIFFS, N. J.

SOUTH

HEAVY CONSTRUCTION—BA

† **Fla., Jacksonville**—ELECTRIC DISTRIBUTION SYS.—BA 3/27—Officer in Charge of Construction, Bldg. 902, Naval Air Station, Jacksonville, electric distr. sys. repairs, Navy Fuel Depot, NOY 801, Spec. 881. Plans deposit $10.

† **Va., Fort Lee**—AIR FORCE FACILITIES—BA 3/28—U.S. Eng. foot of Front St., Norfolk, Zone 1, Air Force Facilities, 3 story rein.-con., masonry dormitory, 1 story dining hall, 2 story headquarters base unit. ENG-44-110-56-21. $500,000-$600,000.

† **Florida**—GAP FILLER FACILITIES—BA On Or About 4/10—U. S. Eng., P. O. Box 4970 Jacksonville, Zone 1, gap filler facilities (FY-55), at Bunnell, Winter Garden and Inverness, Serial No. ENG-08-123-56-52.

Tenn., Knoxville—BA 4/11—City, R. T. Gentry, dir. P. Service, City Hall Park, constr. Riverfront-Willow Avenue Redevelopment Proj., Div. "A", Flood Control Works and Sanitary Sewer readjustments. Plans deposit $25. adv. ENR 3/15. CD 11/25/53.

BUILDINGS—BA

▲ **Va., Norfolk**—HOSPITAL—BA 4/4—DePaul Hospital, Granby and Kingsley Lane, 3 story wing to present hospital. $2,000,000. J. Gerald Phelan, 211 State St., Bridgeport, Conn. and T. David FitzGibbon, Royster Bldg., archts. CD 3/3/55.

BUILDINGS—SLC

▲ **Ala., Montgomery**—SHOPPING CENTER—James Flowers, Representing Owner, 158 Less St., soon lets contract shopping center $3,000,000. Pierre, Ghent & Assocs., 1836 Jefferson Pl., Wash., D. C., and Pearson, Tittle & Narrows, First National Bank Bldg., archts. CD 8/31/54.

▲ **Ala., Montgomery**—COURT HOUSE—Montgomery Co., Court House, soon lets contract court house, $2,000,000. Pearson, Tittle & Narrows, First Natl. Bank Bldg., archts. CD 7/14/54.

Fla., Tampa—WAREHOUSE, etc.—Republic Carloading & Distributing Co., William R. Mote, c/o Eliot C. Fletcher, archt., 404 Marion St., soon lets contract 1 story, 185x200 ft. warehouse and 45x234 ft. terminal.

HEAVY CONSTRUCTION—LB & CA

VIRGINIA—Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond;
Va.—**McDowall & Wood, Inc.**, 1308 W. Main St., Salem, Va., LB $82,663 (4 bidders) 190 ft. bridge, approaches Rte. 91, State Proj. 4486-01-02, Fed. Proj. S-923 (1), Smyth Co.; LB $149,354 (4 bidders) 190 ft. bridge, approaches, Rte. 91, State Proj. 4486-05-07, Fed. Proj. S-923 (2), Smyth Co.;
Va.—**Moore Brothers**, P. O. Box 258, Verona, Va., LB $132,343 (3 bidders) 220 ft. bridge, approaches, Rte. 80, State Proj. 5425-03-04, Fed. Proj. S-255 (2), Dickenson Co. Bids Feb. 29. CD 2/6.

VIRGINIA—Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond;
Va.—**Albert Brothers Contractors, Inc.**, P. O. Box 208, Salem, Va., LB $251,916 (3 bidders) soil aggregate base, bit. top and two structures 2.06 mi. Rte. 726, and 621. State Proj. 1315-18-21-22, Fed. Proj. S-941 (1), Campbell Co.;
Va.—**Atlantic Bitulithic Co.**, 1400 Roseneath Rd., Richmond 21, Va., LB $218,441 (5 bidders) b. conc. 0.78 mi. Rte. 1, State Proj. 1620-08-09. Fed. Proj. F-02-1 (1), Chesterfield Co.;
Va.—**A. B. Burton Co., Inc.**, Box 817, Lynchburg, Va., LB $91,575 (7 bidders) soil aggregate 1.04 mi. Rtes. 766, 684. State Proj. 1305-18-20. Fed. Proj. S-929 (2), Amherst Co.;

(Continued on page 90)

speeds cold weather concreting gives faster, greater strength Columbia Calcium Chloride

Whether you're building roads or constructing buildings of concrete, Columbia Calcium Chloride in the mix saves you considerable time and money. Any time the temperature drops below 70 degrees F., you need Columbia Calcium Chloride to avoid lag in the set of concrete—and to assure high early and ultimate strengths.

It's easy to use this high grade calcium chloride—it can be added to the mix manually, or by automatic feeders. Calcium Chloride is easy to control, too, in either flake form or solution.

Here are some of the advantages you get when you add Columbia Calcium Chloride to your concrete mix

FASTER SET! Under normal conditions, Columbia Calcium Chloride will cut the initial set from three hours down to one, and the final set from six hours to two. The effects are even more pronounced at lower temperatures. Think what this means in getting finishers on the job fast . . . in avoiding costly overtime!

QUICKER EARLY STRENGTH! At 40 degrees F., for example, the strength of Columbia Calcium Chloride cured concrete is as great in one day as plain concrete is in two days—in three and a half days it is as strong as plain concrete after seven days! You can keep the job moving at cost-saving speed with Columbia Calcium Chloride!

INCREASED WORKABILITY! Increased workability without change in the water cement ratio when Columbia Calcium Chloride is used.

GREATER ULTIMATE STRENGTH! Ultimate strength as well as early strength, is greater through the use of Columbia Calcium Chloride. Typical increases from tests show 9% in 3 years, 10% in 5 years.

RELEASES FORMS FASTER! The use of Columbia Calcium Chloride means forms can be moved to other sections faster, cutting down on the total time required for the job, or releasing them for other jobs sooner. You have less money tied up in expensive forms.

Write today to our Pittsburgh address for complete information on Columbia Calcium Chloride for concrete curing.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY

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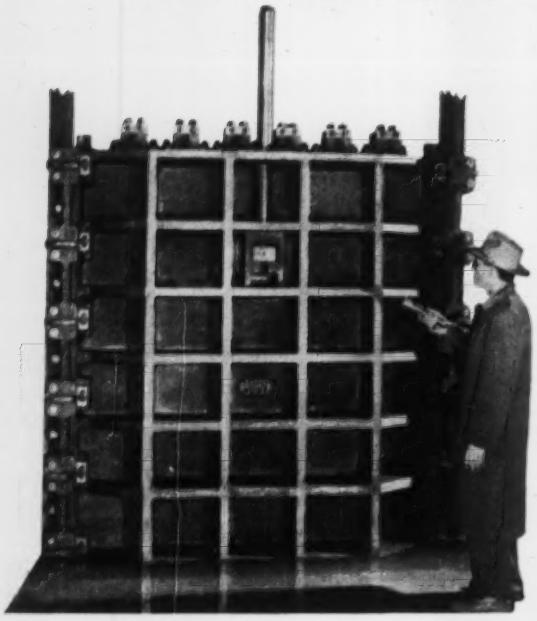
DISTRICT OFFICES: Cincinnati · Charlotte · Chicago · Cleveland · Boston · New York · St. Louis · Minneapolis · New Orleans · Dallas · Houston · Pittsburgh · Philadelphia · San Francisco

IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

FOR GENERATIONS TO COME!



RODNEY HUNT SLUICE GATES

Controlled cast iron from our own modern foundry ... heavy bronze wedges ... generous bronze wedge seats ... seat facings of malleable extruded bronze, pneumatically impacted and work-hardened in machined dovetail grooves of disc and frame ... these are typical of the workmanship which gives Rodney Hunt Sluice Gates their unique value and true economy for generations to come!

Specify Rodney Hunt Sluice Gates for standard sizes of 6 x 6 to 120 x 120 inches clear opening, rectangular or round. Over 2000 combinations of standard Rodney Hunt Sluice Gates, including many of unusual dimensions, are available with precision-built hoists.

Write us for the name and address of the Rodney Hunt representative in your area. He'll be glad to give you quotation information and engineering assistance.

Atlanta	Houston	Omaha
Boston	Kansas City	Orlando
Charlotte, N. C.	Los Angeles	Philadelphia
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RODNEY HUNT

RODNEY HUNT MACHINE CO.
WATER CONTROL EQUIPMENT DIVISION
85 LAKE STREET
ORANGE, MASSACHUSETTS • U. S. A.

(Continued from page 86)

Va.—**Sam Finley, Inc.**, Box 2389, Roanoke, Va., LB $135,226 (4 bidders) soil aggregate base 3.88 mi. Rte. 632. State Proj. 1375-04. Fed. Proj. S-72 (2), Princess Anne Co.;

Va.—**Garrett, Moon & Pool**, Box 112, Blackstone, Va. LB $150,290 (5 bidders) soil aggregate base, bit. surf. tr. and bridge 1.47 mi. Rtes 610, 608. State Proj. 1307-10-11, Fed. Proj. S-141 (2), Augusta Co.;

Va.—**E. W. Muller, Contr.**, 7004 Park Dr., Newport News, Va., LB $178,987 (4 bidders) c. conc. 0.72 mi. Rtes. 168, 143, State Proj. 4894-70; 6194-71. Fed. Proj. U-122-1 (1); (3), City of Newport News. Bids Feb. 29. CD 2/6.

Capitol Pipe Line Constr. Co. & Ken. Ashby, St. Albans, W. Va., LB $86,871, Proj. 1, pipe line exten., Proj. 2, tunnel, WW, WILLIAMSON, W. VA. Municipal Utility Bd., City, City Hall, Williamson W. Va. Bids Feb. 20. CD 1/31.

NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh,

McMeekin Constr. Co., Cheraw, S. C., CA $917,866, est. $400,000-$500,000, bridge over Inland Waterway near Wrightsville Beach on US 74 and US 76. Proj. 3535, New Hanover Co. Bids Feb. 21, awarded Feb. 28. CD 2/24, under LB.

▲† **Young Lumber Co.**, Beaufort, S. C., LB $639,750, five junior officers quarters and 45 married enlisted men's quarters, U. S. Naval Hospital, NOY 88327, BEAUFORT, S.C. P. Wks. Officer, Dpt. Navy, Sixth Naval Dist., Naval Base, Charleston, S. C. Bids Feb. 28, CD 2/8;

Southern Constr. Co., Inc., Daniel Field, Augusta, Ga., LB $2,167,370, married senior officers quarters, 21 married junior officers quarters and 77 married enlisted men's quarters, NOY 91081 (Beaufort, S. C.).

† **Southern Roadbuilders Co.**, 2312 Ada Ramp Walden Rd., Augusta, Ga., LB $208,296, roads and stabilized hardstands, Charleston Transportation Depot, No. 38-081-56-46, CHARLESTON, S. C. U. S. Eng., 31 Custom House, Charleston, S. C. Bids Feb. 24. CD 2/1.

▲† **Tidewater Constr. Corp.**, 538 Front St., Norfolk, Va. LB $4,520,000, constr. first facilities for new Naval Minecraft Base, CHARLESTON, S. C. P. Wks. Officer, Dpt. Navy, Naval Base, Charleston, S. C. Bids Feb. 28. CD 2/8.

ALABAMA—State Hy. Dpt., Montgomery,

Ala.—**Hendry Newton Co.**, Decatur, Ga., LB $106,780, bridge 0.077 mi. over Sauty Creek between Fyffe and Macedonia, Jackson and De Kalb Counties;

Ala.—**G. W. Norrell Constr. Co.**, Georgiana, Ala., LB $114,681, bridges over Swan Creek and over Piney Creek, Limestone Co. Bids Feb. 24. CD 2/14.

▲ **ALABAMA**—State Hy. Dpt., Montgomery,

Ala.—**M. A. Evans Constr. Co.**, Route 1, Wetumpka, Ala. LB $304,673, grading, draining 10.261 mi. Jackson Co.; LB $85,059, base, bit. 8.286 mi. De Kalb Co.; LB $97,490, bit. 0.145 mi. Jackson Co.;

Ala.—**J. W. Gwin Jr., Inc.**, Comer Bldg., Birmingham, Ala. LB $484,829, Proposal B, bit. 13.972 mi. and base and paving 13.255 mi. S-682 (3) and (4), Limestone and Madison Counties;

Ala.—**Stockbridge Stone Co.**, 2019 6 Ave. N., Birmingham, LB $278,620, crushing rock aggreg. for maint. and constr. on roads, Chambers Co.;

Ala.—**Newell Brothers Constr. Co.**, Hope Hull, LB $187,319, bit. 11.877 mi. Reeltown-Union Rd. Tallapoosa Co.

Ala.—**Hillabee Constr. Co.**, Alexander City, LB $138,770, base and bit. 16.521 mi. Proj. 833-4-5-6, Bullock Co.;

Ala.—**O'Dell Constr. Co.**, Montgomery, LB $110,701, bit. 6.857 mi. Elmore Co.;

cancelled bids to have been opened Feb. 24, Proposal "B", crushing rock aggreg. for Guntheraville-Huntsville Rd., FAPf-40, Marshall and Madison Counties. Bids Feb. 24. CD 2/14.

MISSISSIPPI—State Hy. Dpt., Jackson,

Pigford-Noblin Constr. Co., Meridian, Miss., CA, $663,815, est. $610,000. 690 lin. ft. bridge across Nomochitto River, U. S. Hy. 61, between Natchez and Woodville, ER-8 (1), Wilkinson Co. Bids Feb. 28, CD 2/16.

▲† **T. L. James & Co., Inc.**, Ruston, La., LB $2,493,937, airfield paving, lighting, Barksdale Air Force Base, Inv. 56-60, SHREVEPORT, LA. U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids Feb. 23. CD 2/14.

BUILDINGS—LB & CA

▲ **J. Y. Gooch Co.**, 1205 Congress Bldg., Miami, Fla., CA $1,000,000, 2 story DIAL TELEPHONE, SANFORD, FLA. Southern Bell Telephone Co., 1630 Lynch Bldg., Jacksonville, Fla. CD 3/25.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

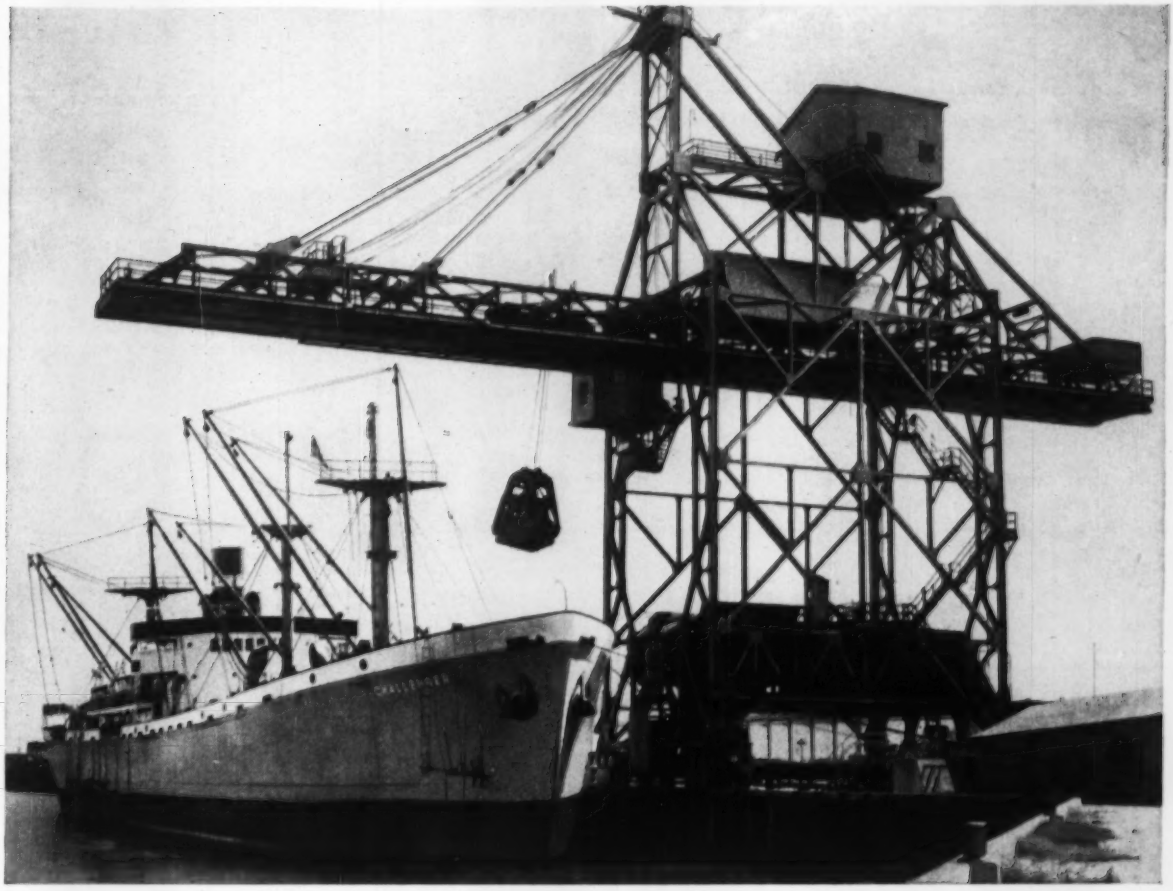
Mich., St. Johns—BA 3/22—City, A. Finch, clk., City Hall, (1), 16,400 ft. 8- to 15-in. sanitary sewers; 950 ft. 6 in. service mains, 1,000 ft. 8-in. c.i. force mains (2) sewage treatment plant. Plans deposit $20 each. R. W. Peteie & Assoc., Inc., 557 Paw Paw Ave., Benton Harbor, archts. CD 11/25.

Mich., Leslie—BA 3/26—Leslie Village. Kathryn Farley, clk., 107 E. Bellevue St., 10,000 ft. 8- to 15-in. vitr., rein.-con. and c.i. sewers (2) sewage treatment plant and outfall sewer. $310,000. Plans deposit $25. Ayers, Lewis, Norris & May, 500 Wolverine Bldg., Ann Arbor, archts. CD 5/13.

HEAVY CONSTRUCTION—LB & CA

City, City Hall, Cincinnati, O., rejected bids Feb. 14, Eggleston Ave. interceptor and appurtenant works, CINCINNATI, O. LB $244,045. CD 2/21, under LB.

(Continued on page 93)



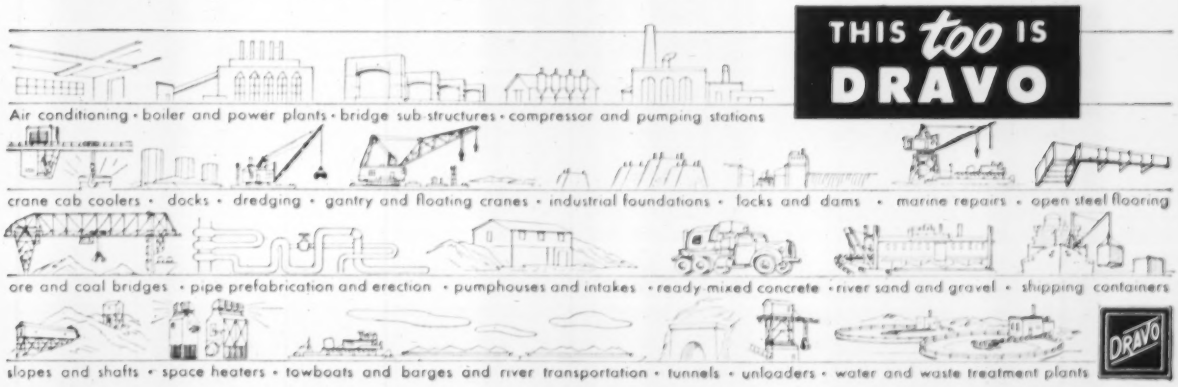
GIANT ORE SHIP COMPLETELY UNLOADED IN 30 HOURS!

This Dravo-designed and built ore unloader at Mobile, Alabama, is setting records in handling incoming Venezuelan ore for southern steel mills.

The new terminal, operated by The Marine Bulk Handling Corporation, unloads ore for use in blast furnaces at U. S. Steel's Tennessee Coal and Iron Division mills at Fairfield, Alabama.

As an example of high speed handling, an ore ship carrying thirty thousand gross tons is completely unloaded in 30 hours. In regular service, the Dravo machine has operated at a rate of 1800 tons per hour. Ore is moved from the unloader to railroad or river barge loading sites by belt conveyor.

Such performance is typical of many heavy material handling systems furnished for industrial plants and utilities throughout the country. It is further evidence of how Dravo has been serving business and industry in many engineering fields for over 60 years, with customer satisfaction always considered an essential aim in every transaction. DRAVO CORPORATION, PITTSBURGH 25, PENNA.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DRAVO
Air conditioning • boiler and power plants • bridge sub-structures • compressor and pumping stations
crane cab coolers • docks • dredging • gantry and floating cranes • industrial foundations • locks and dams • marine repairs • open steel flooring
ore and coal bridges • pipe prefabrication and erection • pumphouses and intakes • ready-mixed concrete • river sand and gravel • shipping containers
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DRAVO

LIMA Type 24 Pullshovel with 17'6" boom, 6'0" bucket arm and ½ cu. yd. bucket.

LIMA Type 24 Jobmaster

best all-purpose performer in its class

Here's a rugged, ½ yd. all-purpose machine with big machine features. Lima's modern, versatile Type 24 *Jobmaster*, a quality-built specialist in its class, has been designed to fit every one of your job needs.

The *Jobmaster* is available with gasoline, diesel or electric power. It can be equipped as a shovel, 15 ton crane, clamshell, dragline or ½ cu. yd. pullshovel with crawler, wagon or truck mountings. The front end equipment can be interchanged easily in the field.

Lima quality guarantees high output, low operating and maintenance costs with the *Jobmaster*. Why not boost your operating profits by putting it to work today. For complete details contact your nearby Lima distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

COMPARE QUALITY! No other machine gives you as much as a LIMA!

These quality extras are yours with the Type 24:

1. All gears have machine cut teeth.
2. Heat treated ground shafting.
3. 55 anti-friction bearings.
4. Air for main and auxiliary controls.
5. Independent propel, third drum and power load lowering (optional).
6. Independent combination chain and cable crowd and retract.
7. Differential steering (similar to tractor).
8. Splined shafting.
9. Internal-external tooth jaw clutch for quick engagement and minimum backlash in gear train.
10. Inside dipper handle—square cross section.
11. All-welded steel construction.
12. Independent boom hoist with engine controlled boom lowering.
13. Floating steel disc type dirt seals in tread rollers.

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BALDWIN BLH LIMA-HAMILTON

LIMA SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

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Construction Equipment Division • LIMA • OHIO • U. S. A.

(Continued from page 90)

BUILDINGS—LB & CA

William F. Demske, 1228 Majestic Bldg., Detroit 26, Mich., CA $530,000, CHURCH, EDUCATIONAL BLDG., Southfield and Acacia Sts., DETROIT, MICH. Calvin Presbyterian Parish, 9131 Whittier St., Detroit, Mich. CD 6/4/54.

Walter Couse & Co., 12740 Lyndon St., Detroit 27, Mich., CA $750,000, CEMENT PLANT, West Jefferson Ave., DETROIT, MICH. Peerless Cement Corp., 1144 Free Press Bldg., Detroit, Mich.

▲ **Sorensen-Gross Constr. Co.**, 2505 Lapeer Rd., Flint, Mich., LB $2,978,000 general contract MUNICIPAL CENTER, incl. 6 municipal bldgs: city hall, auditorium, police bldg., courts bldg., boiler-compressor bldg., FLINT, MICH. City, City Hall, Flint, Mich. Bids Feb. 13. CD 1/6.

Lorne Plumbing & Heating Co., 641 W. Congress St., Detroit, Mich., LB $837,520 mechanical work (Flint, Mich.).

Batzli Electric Co., Inc., 1006 Patrick St., Flint, Mich., Mich., LB $439,944 electrical work (Flint, Mich.).

WEST OF MISSISSIPPI

BUILDINGS—BA

† **North Dakota**—AUTOTRANSFORMER—BA 3/22—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., autotransformer for Grand Forks Sub-station, Transmission Div., Missouri River Basin Proj., Spec. DS-4623. Extended date. CD 2/7.

HEAVY CONSTRUCTION—LB & CA

† **Ideker Constr. Co.**, Mound City, Mo., LB $48,373, clearing Lovewell Reservoir site, Bostwick Div., Missouri River Basin Proj., near Superior, Inv. 701C-396, NEBRASKA. Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. Bids Feb. 21. CD 5/25/44.

† **W. E. Steelman**, P.O. Box 1283, Oklahoma City, Okla., LB $240,032, street imprvs., Altus Air Force Base, ENG-34-066-56-45, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Feb. 24.

▲ **Bethlehem Steel Corp.**, Island Park, Beaumont, Tex., CA Est. $6,750,000 drilling platform, TEXAS. C. G. Glasscock Drilling Co., Wilson Tower, Corpus Christi, Tex.

Harris Constr. Co., 91 Detering St., Houston, Tex. CA $77,117, constr., asph. paving new streets, curb and gutter, HOUSTON, TEX. Melburn Corp., c/o C. W. Murray, 7603 Belgard St., Houston, Tex.

Harris Constr. Co., 91 Detering St., Houston, Tex. CA $46,116, bldg. site area earthwork, grading, filling, HOUSTON, TEX. Melburn Corp., c/o C. W. Murray, 7603 Belgard St., Houston, Tex.

Harris Constr. Co., 91 Detering St., Houston, Tex. CA $78,000, natural gas lines, HOUSTON, TEX. Melburn Corp., c/o C. W. Murray, 7603 Belgard St., Houston, Tex.

BUILDINGS—LB & CA

† **Veterans Admin.**, Munitions Bldg., Wash., D. C., cancelled bids to have been opened Apr. 3, consolidation of REGIONAL OFFICE MEDICAL CLINIC with HOSPITAL, Veterans Administration Hospital, LITTLE ROCK, ARK. CD 2/15.

▲ **General Electric Co.**, 320 WOW Bldg., Omaha, Neb. CA $3,948,939, Spec. X-1325, turbine generator unit and major electrical equipment for GENERATING PLANT, LEXINGTON, NEB. Central Nebraska Public Power & Irrigation Dist., Hastings, Neb. Grand total $7,459,620. Bids Dec. 20, awarded Feb. 7. CD 2/20, under LB.

Combustion Engineering, Inc., 200 Madison Ave., New York, N. Y., CA $2,736,942, Spec. X-1326, steam generating unit and auxiliary equip. (Lexington, Neb.).

Foster Wheeler Corp., 160 Broadway, New York 6, N. Y., CA $497,096, Spec. X-1329, condensing equipment (Lexington, Neb.).

Pacific Pumps, Inc., Bickett and Slauson Sts., Huntington Park, Calif., CA $276,643, Spec. X-1330, boiler feed pumps (Lexington, Neb.).

Central Nebraska Public Power & Irrigation Dist., Hastings, Neb., rejected bids Dec. 20, Spec. X-1328, feed water heaters for GENERATING PLANT, LEXINGTON, NEB. CD 11/25.

Union College, 3800 S. 48 St., Lincoln, Neb. Owner Builds. $550,000. women's DORMITORY, LINCOLN, NEB. Davis & Wilson, 225 Stuart Bldg., Lincoln, Neb., archts. CD 2/4/54.

R. B. Butler, Inc., Box 471, Bryan, Tex., CA $948,560. DAIRY BIOCHEMISTRY BLDG. with attached CREAMERY, COLLEGE STATION, TEX. A. & M. College of Texas, College Station, Tex. Bids Feb. 15. CD 2/23, under LB.

Hou-Tex Peanut Co., 1105 McCall St., Houston, Tex. Own Forces. $185,000, peanut MILL, HOUSTON, TEX. CD 8/23/54.

Helton Boat Works, Harrisburg and Hughes Sts., Houston, Tex. Purchase and Hire. $250,000. BOAT PLANT, HOUSTON, TEX. CD 9/9.

FAR WEST

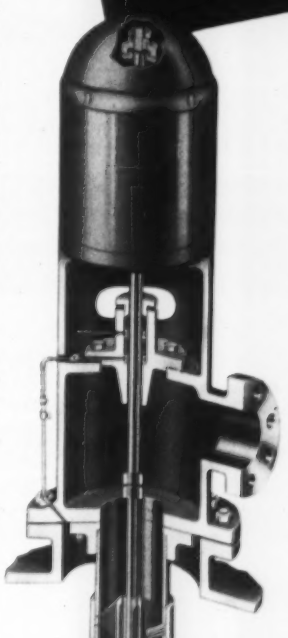
HEAVY CONSTRUCTION—BA

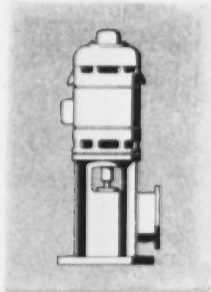
† **California**—BA 3/27—U. S. Eng., 1209 B St., Sacramento, 227 ft. rein.-con. inlet structure thru Sacramento River levee at Elkhorn Slough, Yolo Co., CIVENG-04-167-56-52. CD 7/6.

† **California**—BA 3/27—U. S. Eng., 1209 B St., Sacramento, grubbing, clearing 2,400 acres along Feather River in Sutter Bypass upstream to Yuba River, Sutter Co., CIVENG-04-167-56-84. $500,000. CD 7/6.

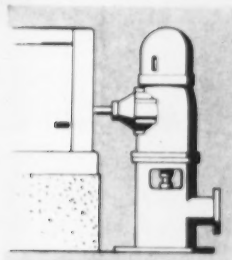
(Continued on page 96)

Verti-Line Pumps offer your choice of drivers

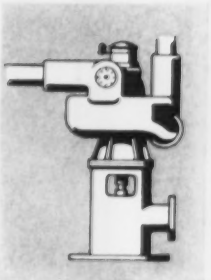




Electric Motors



Internal Combustion Engines



Steam Turbines

No matter what your source of power—whether for regular service or standby—for steady or intermittent use—you can have what you want with your Verti-Line Industrial Pump. There is a Verti-Line discharge head to meet your conditions of service and to accommodate any type of drive.

Verti-Line Pumps are designed and engineered for such jobs as booster service, fire protection, cooling, transfer and general service pumping of water and other fluids, corrosive and non-corrosive—*Verti-Line Pumps are not just another deep well pump adapted to industrial service.*

Combination Drives

CAPACITIES from 20 GPM to 30,000 GPM
—HEADS to 600 PSI

Whatever your needs for vertical pumps may be, investigate Verti-Line before you buy! Verti-Line Pumps are sold and serviced by independent distributors and dealers only.

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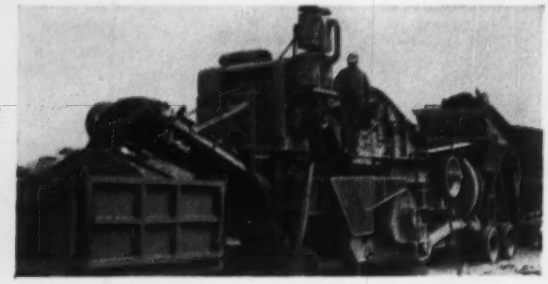
For Lower Costs on SPECIFY GM In ALL Your

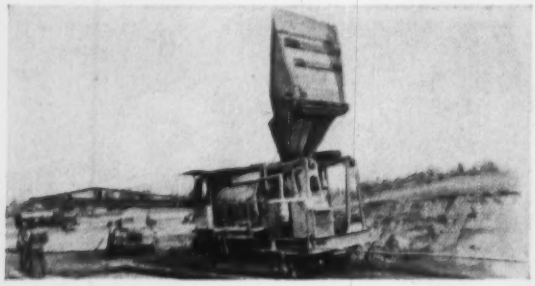
PRODUCTION DOUBLED—FUEL COSTS CUT 33⅓%

When Clark & Sons Sand & Gravel Company switched to a GM 2-cycle Detroit Diesel properly engineered for this dredge, production jumped more than 200% and fuel costs dropped one third. GM Detroit Diesel weighs half as much as engine it replaced, starts easier, too.



FUEL COSTS $1.18 PER HOUR

And that's "mighty cheap" for a 300-H.P. engine according to Charles Bartelma, Superintendent of Minnesota's Kimmes Construction Company. This GM Detroit Diesel-powered Cedarapids crusher produces 4,200 tons of gravel a day—engine has had no repairs in 2½ years.



PRODUCTION UP 30%—FUEL COSTS CUT 40%

When Calumet Paving Company switched to a GM Detroit Diesel on this paver they got an engine that "starts easier, performs better, costs less for fuel and maintenance." Company also operates two other pavers and three crawlers—all GM Detroit Diesel-powered.

15 YEARS' SERVICE AND STILL GOING STRONG

The GM Detroit Diesel in this Koehring shovel went to work for Paul Frank, Inc., in 1941—is still giving "economical, trouble-free service." Owner calls engine an "excellent investment, considering low first cost, operating economy and long life between overhauls."

OPERATES 20 GM DETROIT DIESELS

Ohio road-builder A. J. Baltes, Inc., operates 20 GM Detroit Diesel engines powering shovels, cranes, draglines and other equipment. Company specifies GM Detroit Diesel power when ordering new equipment—also replaces other engines with GM Detroit Diesels to get "the fundamentals needed for economical operation—performance, economy and service availability."

Every Contract

DETROIT DIESEL POWER

Construction Equipment

YOU CAN HANDLE every construction job from first cut to final paving—and handle it at less cost—with General Motors Detroit Diesel-powered equipment.

Shovels, scrapers, compressors, graders—machinery for over 1,000 applications made by more than 150 manufacturers—are powered with GM Detroit Diesel engines, *America's first choice Diesel.*

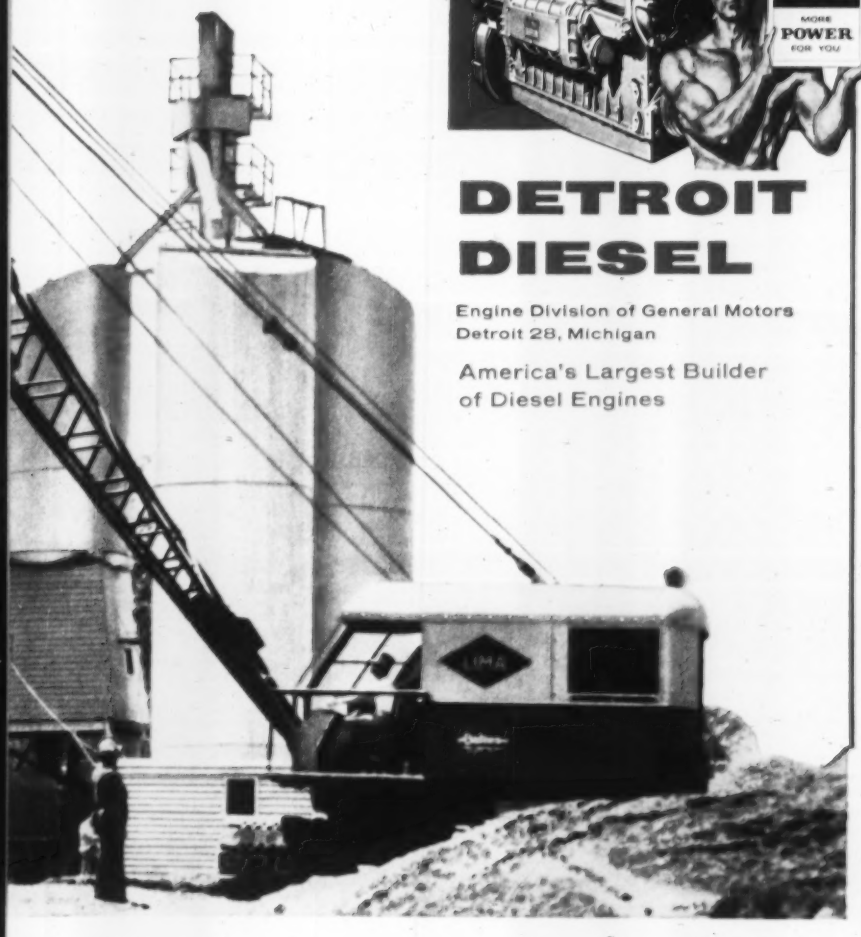
This compact, brawny work horse costs less to buy than other Diesels of comparable horsepower.

It costs less to run because its snappy 2-cycle operation gives faster acceleration, faster digging and hauling, more work done per shift.

And it costs less to maintain, too. Parts cost less. Valves, cylinder liners cost less than similar parts for other Diesels.

For full details on GM Detroit Diesels—and the equipment they power—call in your local GM Detroit Diesel distributor or write direct.

Single Engines . . . 30 to 300 H.P.
Multiple Units . . . Up to 895 H.P.



DETROIT DIESEL

Engine Division of General Motors
Detroit 28, Michigan

America's Largest Builder of Diesel Engines

Parts and Service

When and Where You Need 'em

Back of GM Detroit Diesel performance stands a national network of 165 GM Detroit Diesel distributors and dealers.

They're ready to supply you with factory-engineered parts *where* and *when* you need them.

They're ready to send factory-trained servicemen speeding to your job day or night—men with all the skill and know-how it takes to keep your GM Detroit Diesels running right.

And they're ready to fill your every power need whatever it is—from a complete new engine to a minor replacement part.

When you get replacement parts from your GM Detroit Diesel distributor or dealer you're getting *factory-engineered* parts built to the same high quality standards—by the same precision methods—as the parts used in building GM Detroit Diesel engines.

You get parts with every improvement advanced engineering has developed because *only* GM Detroit Diesel parts have *all* the improvements originated by GM engineers at Detroit Diesel.

And you get longer-wearing parts that have been proved in billions of hours of service on the toughest jobs.

For full details on the parts and service behind GM Detroit Diesel performance, call in your local GM Detroit Diesel distributor or dealer. He's listed in the Yellow Pages—or write direct for the name of the distributor nearest you.

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HENRY BACKHOE
Henry Industrial Tractor Shovel
HENRY BACKHOE — INDUSTRIAL TRACTOR SHOVEL
MATCHED Digging and Loading Power with unmatched performance
This championship team — made together to work together — cuts costs for any construction company on all their digging and load jobs. Here's time and money saver when big machines are used on major jobs. See your equipment distributor or write the address below.
"YOU CAN DO IT BETTER WITH A HENRY"
HENRY
HYDRAULIC all purpose EARTH MOVERS
MANUFACTURING COMPANY, Inc.

Now you can have the economy, efficiency and safety of power steering **without investing in new capital equipment**. Behlen Powr Steer is easily installed on many models of your present tractors, motor graders, etc.—saves time on the job and therefore cuts your labor costs. Cuts time lost and other expense because of wrenched backs, broken arms. Heavy duty design provides effortless turning and steering on the toughest jobs.

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The answer to successful use of

HIGH STRENGTH STRUCTURAL BOLTS

This impact wrench calibrator makes it easy to accurately tighten every bolt to specified tension. Permits on the job determination of wrench performance. Simple adjustments are then readily made to make the wrench stall when proper tension is reached.

ACCURATE—PORTABLE
RUGGED
PROMPT DELIVERY
WRITE FOR BULLETIN 102

SKIDMORE-WILHELM
Manufacturing Company
442 Green Rd., Cleveland 21, Ohio

(Continued from page 93)

† California—BA 4/4—Bureau Reclamation, Dpt. Interior, Weaverville, Trinity Dam Diversion Tunnel, Central Valley Proj., near Lewiston, Spec. DC-4650; adv. ENR 3/15. CD 4/20/45.

BUILDINGS—BA

Calif., Redlands—SCHOOL—BA 3/23—Redlands School Dist., 653 E. Fern Ave., Edward M. Cope Junior High School, $500,000. Plans deposit $25. Ulmer & Rock, 229 E. State St., archts. CD 2/7.

▲ Calif., San Luis Obispo—ENGINEERING—BA 4/4—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 1 story, E-shaped engineering bldg., California State Polytechnic College, $1,410,500. Plans deposit $75. CD 1/14/55.

HEAVY CONSTRUCTION—LB & CA

▲ OREGON and WASHINGTON—State Hy. Dpt., Salem, Ore., and Washington State Hy. Comm., Olympia, Wash. Guy F. Atkinson & Co., 10 W. Orange Ave., S. San Francisco, Calif., (6 bidders) LB $5,564,180, new bridge; LB $1,117,760, widen bridge over Columbia Slough, Columbia River Bridge Proj. between Portland, Ore. and Vancouver, Wash., Multnomah Co., Ore., Clark Co., Wash. Bids Mar. 1. CD 1/27.

▲† San Francisco Bridge Co., 140 Montgomery St., San Francisco, Calif., CA, $2,921,750, dredging, extending seawall, Alameda Air Station, NOY 91693, Spec. 50105, ALAMEDA, CALIF. Dist. P. Wks. Officer Twelfth Naval Dist., San Bruno, Calif. Bids Dec. 21. CD 1/4, under LB.

† Peletz Co., Inc., 475 W. College Ave., Santa Rosa, Calif., CA, $111,000 replacement, rehabilitation salt water lines, Mare Island Naval Shipyard, NOY 96490, Spec. 50103, VALLEJO, CALIF. Dist. P. Wks. Office, Twelfth Naval Dist., San Bruno, Calif. Bids Feb. 1 CD 1/13.

CANADA

HEAVY CONSTRUCTION—BA

Ontario—BA 3/20—Hydro-Electric Power Comm. of Ontario, 620 University Ave., Toronto, Morrisburg Waterworks Pumping Station in connection with changes caused by St. Lawrence Seaway, Morrisburg, Over $50,000. Plans deposit $10. W. Hogg, c/o owner, Cornwall, Ont., field engr.

▲ Quebec—BA 3/27—St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. first stage constr., Lowe & Upper Beauharnois Locks and approaches, part of St. Lawrence Seaway Proj., Plans deposit $100. A. Gordon Murphy, c/o owner, 685 Cathcart St., Montreal, Que., ch. engr. CD 4/9/54.

BUILDINGS—BA

▲ Ont., St. Catharines—HOME FOR AGED—BA 3/20—St. Catharines & Lincoln County Home for the Aged, c/o Macbeth & Williams, archts., 104 Queen St., 225-bed, brick, block, steel home for aged, $1,300,000. CD 7/19.

Ont., Kingston—PRISON—BA 4/16—Dpt. Justice, Penitentiares Branch, Justice Bldg., Ottawa, womens prison bldgs., Collin's Bay Penitentiary. $428,700. Plans deposit $100. CD 6/16.

Que., Granby—PLANT—Bids Asked—Burlington Mills Ribbon Corp. of Canada Ltd., Dorchester St., 1 story, 125x160 ft., structural steel masonry plant addn. $100,000. Greenspoon, Freedlander & Dunne, 4151 Sherbrooke St. W., Montreal, archts.

HEAVY CONSTRUCTION—LB & CA

Pearce Constr. Co. Ltd., 46 King St. W., Hagersville, Conn., CA, $247,598, sewage treatment plant addns., AURORA, ONT. Town, Town Hall, Aurora, Ont. Bids Oct. 17, awarded Feb. 22. CD 9/28.

Horton Steel Works Ltd., 40 Jennet St., Fort Erie, Ont., CA, $148,925, elevated storage tank, BELLEVILLE, ONT. Belleville Public Utilities Comm., 277 Front St., Belleville, Ont. Awarded Feb. 20. CD 12/30/54.

BUILDINGS—LB & CA

Disher Steel Constr. Co. Ltd., 80 Commissioners St., Toronto, Ont., LB $317,800, structural steel COURT HOUSE, REGISTRY OFFICE, HAMILTON, ONT. Joint Court House Committee, c/o Prack & Prack, archts., 310 Main St. E., Hamilton, Ont. CD 2/9.

▲ Dunker Constr. Co. Ltd., 178 Louisa St., Kitchener, Ont., CA, $1,125,000 (5 bidders) 1 and 2 story, X-shaped, split-level, 90,000 sq. ft., steel, masonry, concrete, brick HOME FOR AGED, KITCHENER, ONT. Waterloo County Home for the Aged, County Bldgs., 200 Weber St., Kitchener, Ont. Bids Feb. 22, awarded Feb. 24. CD 1/25.

H. J. Heinz & Co. of Canada Ltd., Erie St. S., Leamington, Ont. Own Forces. $350,000, rehabilitation of pickle line at FACTORY, LEAMINGTON, ONT. CD 10/3.

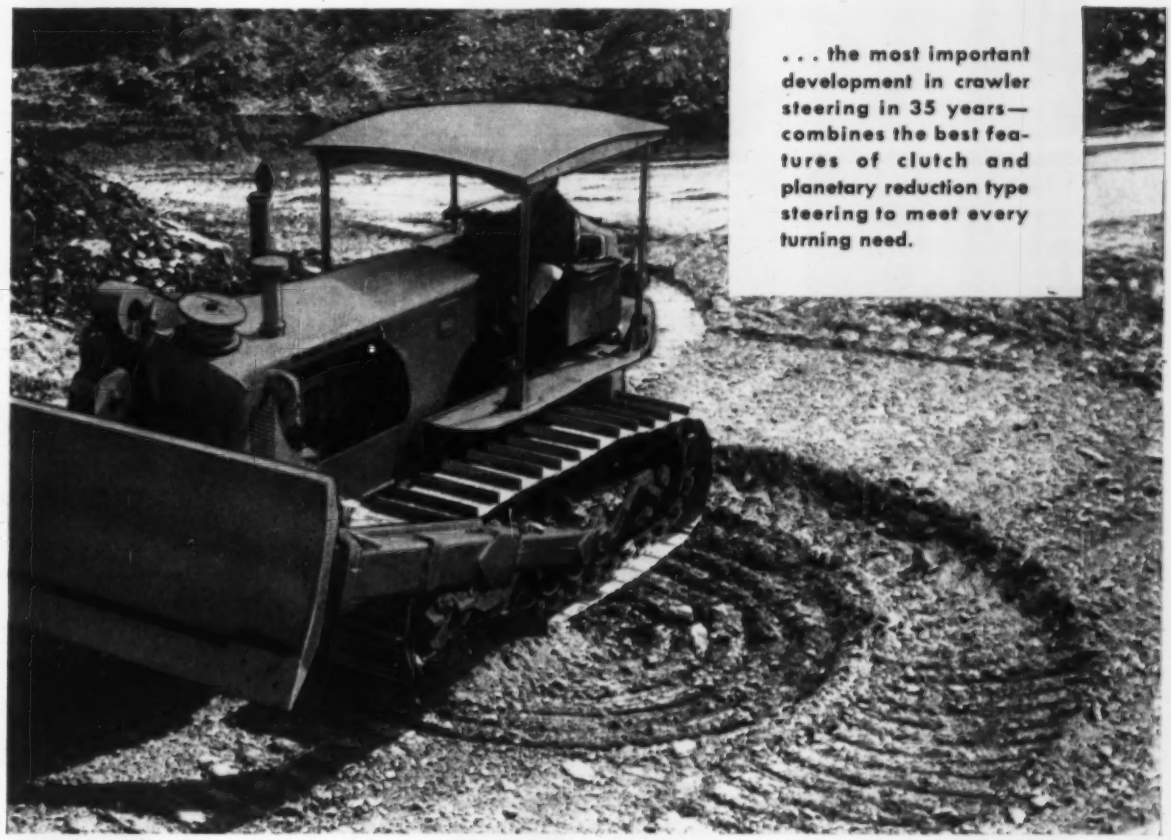
▲ Fraser-Brace Eng. Co. Ltd., 360 St. James St. W., Montreal, Que., CA $1,250,000, Chemical Research Pilot PLANT, NIAGARA FALLS, ONT. Strategic-Udy-Metallurgical & Chemical Processes Ltd., c/o 620 Cathcart St., Buffalo, N. Y. Surveyor, Nenninger & Chenevert, 1440 St. Catherine St. W., Montreal, Que., engrs. Awarded Feb. 20.

I. G. O. Fenton Constr. Ltd., 524 Jean Talon St. W., Montreal, Que., CA, $125,000, FACTORY and OFFICE, MONTREAL, QUE. Best Ever Footwear Co. Ltd., 2035 Desjardins St., Montreal, Que. David Reich, 582 Cote St. Luke Rd., Montreal, Que., archt. Henry Jasen & B. A. Eskenazi, 1410 Guy St., Montreal, Que., engrs. Awarded Feb. 21.

(Continued on page 98)

New OLIVER OC-18

with Amazing POWER-TURN



. . . the most important development in crawler steering in 35 years—combines the best features of clutch and planetary reduction type steering to meet every turning need.

—plus 12 more important improvements to step up your earning power

Bring on your toughest dozing, scraping and winching jobs! The new Oliver OC-18 gives you the all-around performance that means shorter work and longer profits.

You've never known 161 h.p. so responsive, so easily controlled. You make spot turns or gradual turns—start, stop, vary your speed or pulling power without declutching. That's what the amazing new Oliver Power-Turn does for you!

But there's far more—12 brand new features that add to your production and profit. For example, new type master clutch with ceramic lining gives you up to 800% longer life and 50% less engaging effort...anti-friction bearing wheels go 1000 hours without greasing...new main springs with no weakening center bolts to invite breakage...greater ground clearance...new self-cleaning, non-clogging rear sprockets...pressurized cooling system for better operation at high altitudes and in hot climates. These, and more, are standard equipment at no extra cost.

Your dependable Oliver Distributor invites you to see and operate this outstanding new OC-18 Crawler Tractor. Call him today for a free demonstration. Or write us for literature.

THE OLIVER CORPORATION
400 West Madison Street • Chicago 6, Illinois

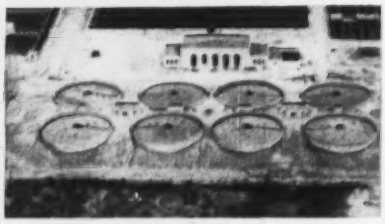
OLIVER

a complete line of industrial wheel and crawler tractors and matched allied equipment

PRELOAD

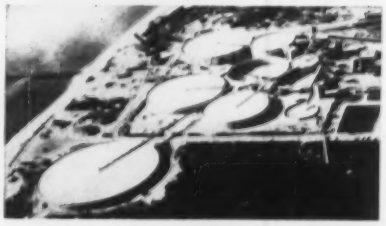
PRESTRESSED CONCRETE TANKS

WALLS RIDE ON RUBBER TO PREVENT CRACKING



Philadelphia Sewage Treatment Plant

This PRELOAD feature plus the PRELOAD SYSTEM of design and prestressing circular tanks give the ultimate in large capacity liquid containers. The typical 2.7 M.G. tank above was built for the City of Miami in 1945 and is just one of the more than 1,000 PRELOAD tanks built in the last 20 years. In use for water storage, sewage digesters and process and storage in the chemical, paper and petroleum industries in all parts of this country and overseas. PRELOAD tanks represent the lowest in ultimate cost over conventional reinforced concrete or steel construction, because of material savings, long life expectancy, and elimination of maintenance.



Industrial Tanks

PRELOAD ADVANTAGES

- **A PRELOAD structure is maintenance-free. Nothing to deteriorate or protect.**
- **Aesthetically, PRELOAD structures lend themselves to architectural treatments impossible with any others.**
- **Over 1,000 PRELOAD tanks and 20 years of experience your guarantee of satisfaction.**

2 M.G. Elevated Tank

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TRADE MARK

The Preload Company, Inc.
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IMPORT GRAY PORTLAND

CEMENT

Guaranteed to meet ASTM C-150-53 Type I Specifications. Also import Clinker Cement

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1400 SOUTH PENN SQUARE • PHILADELPHIA 2, PA., U. S. A.

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(Continued from page 96)

PROPOSED PROJECTS

WATER SUPPLY

▲ Ala., Birmingham—Water Works Bd. City, 2114 1st Ave. N., installing misc. mains, hydrants, meters, etc. $961,000; relocating raw water mains near Shades Mt. filter plant, $150,000; improv. intermediate sys. south of Shades Mountain, $110,000; Shades Mt. high service sys. imprvs. $49,000; Birmingham station imprvs. and installing pipe, $691,000; Shades Mt. station imprvs. $80,000; installing 19,000 ft. 16 in. pipe for Huffman main, $130,000; installing 3,000 ft. 20 in. pipe in 22 St. $50,000; work on North Highlands water tank, $280,000. CD 8/21/52

▲ Calif., Concord—Contra Costa Co., Flood Control & Water Dist., 2400 Oakgrove Rd., bond election Apr. 3, reconstr. water sys. $9,875,000.

▲ Calif., Oakland—Alameda Co., Court House, bond election Mar. 27, water sys. imprvs. Washington Twp. $4,290,000.

▲ Calif., Santa Rosa—Sonoma Co., Court House, pumping plant, reservoir for pumping water from Russian River. $4,200,000.

▲ Tex., Irving—City, City Hall, WW rehabilitation, $100,000; water storage, $150,000; c. i. water lines, $1,716,000. CD 6/27/53.

SEWERS, WASTE DISPOSAL

▲ Calif., Lancaster—Sanitary District No. 4, Lancaster, $2,377,000 bond election Apr. 10 relocating sewage plant and extending mains.

Calif., Palo Alto—City, City Hall, sewer plant expansion, storm drain and outfall imprvs. $600,000. Harry Jenks, 63 Crescent Dr., consult. engr. CD 10/10/45.

Ill., Spring Valley—City, City Hall, sewers and sewage treatment plant. $650,000. C. K. Willett, 312 N. Galena St., Dixon, consult. engr. CD 9/30/54.

▲ Mo., St. Louis County—Metropolitan St. Louis Sewer Dist., William Q. Kehr, exec. dir., 508 Olive St., St. Louis, Zone 1, major trunk sewerage sys., to serve Florissant, Hazelwood, part of Berkeley, St. Ann and St. John-Overland Sewer District and adjacent area in Coldwater Creek section of northwestern part of St. Louis County to involve about 8 mi. sewers. $3,500,000. Horner & Shifrin, 1221 Locust St., St. Louis, Zone 1, and Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, Ill., consult. engrs. CD 2/13.

▲ Neb., Lincoln—City, City Hall, $1,500,000 bond election June 26, sanitary sewers, various sects. Carl Fisher, city engr. CD 6/27/54.

N. Y., Manorhaven (P. O. Port Washington)—Village, sanitary sewerage system, $985,000, Clarence MacCallum, 937 Port Washington Blvd., Port Washington, engr. CD 10/26.

▲ Tex., Houston—City, City Hall, storm sewer between Jensen and N. Shepherd, for completion North Loop, $1,200,000. Frank Baldwin, City P. Wks. Dir. CD 2/2.

▲ Tex., Irving—City, City Hall, sanitary sewerage sys. rehabilitation, $90,000; storm sewers, $400,000; sanitary sewer lines, $1,250,000; sewage disposal $165,000. CD 6/30/52.

Wash., Seattle—Lake City Sewer Dist., 10525 39 Ave. NE., sewers in Utility Local Improv. Dist. No. 5, between N. 90 and 110 Sts., Fremont and Meridian Aves. $810,000.

BRIDGES

▲ Calif., Modesto—Stanislaus Co., Court House, bond election June 5, new bridges and roads, and rehabilitation existing ones, $5,000,000. CD 3/12/45.

▲ Fla., Dunedin—City Comn., City Hall, causeway to Caladesi Island. $1,600,000.

▲ Tex., Houston—City, City Hall, grade separation, N. Shepherd St., $1,000,000; constr. another Buffalo Bayou Bridge crossing, $400,000; bridge over Sims Bayou, $120,000; constr. another bridge across Brays Bayou, $150,000. Frank Baldwin, Dir. P. Wks. Utilities. CD 2/2.

STREETS AND ROADS

▲ Neb., Lincoln—City, City Hall, $1,500,000 bond election June 26, street imprvs., various sect. of city. Carl Fisher, city engr. CD 12/7/54.

▲ NEW JERSEY—Port of New York Auth., 111 8th Ave., New York 11, N. Y., traffic interchange connecting U. S. Route 1 and Newark Airport. $9,000,000.

▲ OHIO—State Hy. Dpt., Columbus,
Summit Co.—North End Expressway starting at Springfield Rd. and going approx. 2 mi. to west corporate line between Evergreen and Hermann Sts. with interchange at Wooster Rd. and State St., Barberton. $4,938,900. Beisaenger & Hoch, 662 Market St., Akron, consult. engrs.

Tex., Irving—City, City Hall, street imprvs., paving $600,000.

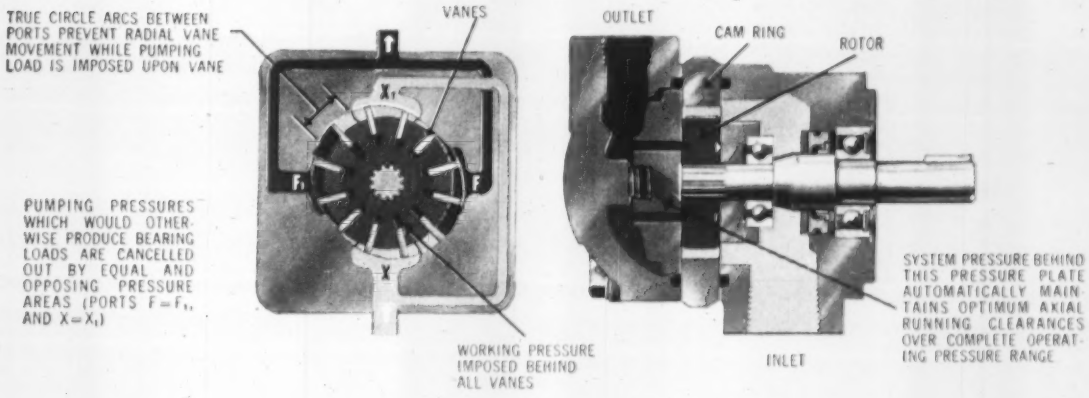
Wash., Othello—Town, Town Hall, asph. paving streets with curbs, gutters and storm drains. $650,000.

▲ WEST VIRGINIA—State of West Virginia, Charleston, authorized feasibility study, extending West Virginia Turnpike to Ohio and Pennsylvania Borders. $133,000,000. To go ahead 1957. Wilbur Smith Assocs., 265 Church St., New Haven, Conn., traffic

(Continued on page 101)

Question: Why are VICKERS Balanced Vane Pumps the most widely used oil hydraulic power pumps on mobile equipment?

MILLIONS OF VICKERS VANE TYPE PUMPS ARE RUNNING EVERY DAY


TRUE CIRCLE ARCS BETWEEN PORTS PREVENT RADIAL VANE MOVEMENT WHILE PUMPING LOAD IS IMPOSED UPON VANE
VANES
OUTLET
CAM RING
ROTOR
PUMPING PRESSURES WHICH WOULD OTHERWISE PRODUCE BEARING LOADS ARE CANCELLED OUT BY EQUAL AND OPPOSING PRESSURE AREAS (PORTS F=F1 AND X=X1)
SYSTEM PRESSURE BEHIND THIS PRESSURE PLATE AUTOMATICALLY MAINTAINS OPTIMUM AXIAL RUNNING CLEARANCES OVER COMPLETE OPERATING PRESSURE RANGE
WORKING PRESSURE IMPOSED BEHIND ALL VANES
INLET

Answer: Because of their SUPERIOR PERFORMANCE and MANY OTHER BENEFITS for the user.

For more than two decades, the Vickers Balanced Vane Type has held the leading position among hydraulic power pumps . . . growing steadily in popularity. The various models (only a few shown below) are *the most widely used of all pumps in oil hydraulic service on mobile equipment.*

The many advantages listed hereafter merit the thoughtful attention of anyone concerned with the selection and use of oil hydraulic pumps for construction, automotive, agricultural and materials handling equipment.

COMPLETE HYDRAULIC BALANCE—Each inlet and outlet port is balanced by another equal in size and radially opposite . . . pressure-induced bearing loads are thus eliminated.

VICKERS INCORPORATED

DIVISION OF SPERRY RAND CORPORATION

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Application Engineering Offices: ATLANTA • CHICAGO CINCINNATI • CLEVELAND • DETROIT • HOUSTON • LOS ANGELES AREA (El Segundo) • MINNEAPOLIS • NEW YORK AREA (Summit, N.J.) • PHILADELPHIA AREA (Media) PITTSBURGH AREA (Mt. Lebanon) • PORTLAND, ORE. ROCHESTER • ROCKFORD • SAN FRANCISCO AREA (Berkeley) SEATTLE • ST. LOUIS • TULSA • WASHINGTON WORCESTER

IN CANADA: Vickers Sperry of Canada, Ltd., Toronto

OPTIMUM RUNNING CLEARANCES—Both radial and axial clearances are automatically maintained over complete operating pressure range and throughout pump life.

FLOATING ROTOR DRIVE—Rotor is free to float, for correct centering and alignment, on a rigidly supported spline.

TRUE-CIRCLE CAM ARCS between ports prevent radial vane movement while pumping load is imposed upon vanes. Wear between vanes and rotor is thus practically eliminated.

EASIER COLD WEATHER STARTING—At normal engine starting speeds vanes are retracted . . . centrifugal force is insufficient to throw vanes outward into operating position . . . thus no pumping action takes place and pump drag on starting engine or motor is nonexistant. Only after engine starts is speed sufficient to extend vanes and begin pumping.

GREATER INSTALLATION ADAPTABILITY—Various types of mountings and four optional positions of pressure outlet connection. By unbolting and rotating pump head, the outlet can be placed parallel, opposite to or at a right angle in either direction to inlet. Shaft drive is in either direction depending only on internal assembly. Pump can be driven by belt, chain, gear or directly coupled.

HIGHER EFFICIENCY—Tests prove exceptionally high volumetric and overall efficiency . . . not only when pump is new but also after long service.

AUTOMATIC WEAR COMPENSATION—Vanes are held in contact with the cam ring by centrifugal force and hydraulic pressure. If wear occurs, vanes revolve in a slightly larger orbit without appreciable change in performance.

TEMPERATURE ADAPTABILITY—Correct running clearances are automatically maintained which compensate for wide variation in oil viscosity resulting from temperature variation.

MINIMUM MAINTENANCE—Hydraulic balance . . . optimum running clearances . . . floating rotor drive . . . automatic wear compensation eliminate the most important causes for maintenance and repair.

LONGER LIFE—The numerous features mentioned above that keep down maintenance also contribute to longer life.

COMPACT—These pumps occupy very little space in proportion to their capacities.

CONSTRUCTION SIMPLICITY is evident from the illustrations above. This simplicity is another reason for the superiority of Vickers Vane Pumps. For further information, ask for Bulletin M-5101.

Single pump available in five basic case sizes having 15 normal-delivery ratings. Operating pressures to 1500 psi (two largest units to 1000 psi).

Double pump for operating two independent hydraulic circuits from one power source. Available in 38 combinations. Operating pressures to 1500 psi (two largest units to 1000 psi).

"Package" type pump with integral volume control and relief valve, and oil reservoir, also available without oil reservoir. See Bulletin M-5107. (This pump only.)

ALL MODELS HAVE THE VICKERS ADVANTAGES MENTIONED ABOVE

7353

OWENS-CORNING

FIBERGLAS

ALL-WEATHER PROTECTION FOR PREFABS

From factory to building site, parts stay dry under Fiberglas-reinforced weatherproof papers

Be satisfied with nothing less than *full* protection of the prefabricated parts you make or use. See that they're securely wrapped in Fiberglas*-reinforced weatherproof paper.

No other reinforced paper is so strong and thus so impermeable to the ravages of weather. Source of its superstrength is the reinforcement of Fiberglas filaments — rotproof, moisture-proof, resistant to insects and vermin. Prefabricated parts wrapped in these papers can be shipped long distances, stored outdoors for months without danger of rotting or warping.

Expensive? Not at all. Fiberglas-reinforced weatherproof papers cost no more than ordinary reinforced papers.

*T. M. Reg. (U.S. Pat. Off.) O-C. F. Corp.

PROTECTION IN TRANSIT of prefabricated parts, such as this huge arch, is best assured with Fiberglas-reinforced weatherproof papers.

FREE SAMPLE KIT — contains applications of Fiberglas - reinforced weatherproof papers and a list of suppliers. For your copy, write Owens-Corning Fiberglas Corp., Dept. 145C, Toledo 1, Ohio.

(Continued from page 98)

survey. J. E. Greiner & Co., 1106 N. Charles St., Baltimore, Md., survey for construction costs.

EARTHWORK, WATERWAYS

▲ **Quebec**—Aluminum Co. of Canada Ltd., Sun Life Bldg., Montreal, power development on Peribonka River Lake St. John District, Chute Diable, $30,300,000. H. G. Acres & Co., Ltd., 1257 Dorchester Rd., Niagara Falls, Ont., consult. engrs. CD 2/27.

AIRPORTS

Ala., Birmingham—RUNWAYS—Birmingham City Aviation Advisory Council, City Hall, extendng. Northeast and West Runways to 7,900 ft. $900,000. Goodwin & Co., 2111 7 Ave. S., consult. engrs. Bids about June 30. CD 8/2.

▲ **Calif., Los Angeles**—AIRPORT IMPRVS.—City, City Hall, $59,700,000, bond election June 5. International Airport imprvs., incl. extending runways, passenger terminal, San Fernando Valley Airport and heliports. CD 5/16/45.

▲ **Ky., Erlanger**—AIRPORT IMPRVS.—Kenton County Airport Bd., Third and Court Sts., Covington, plans by Howard Elliston, 706 Walnut St., Cincinnati; O. expansion of 2 story, bsmnt., brick restaurant, lounge, offices, admin., offices at Boone County Airport. $1,000,000. Hall McAllister & Stockwell, 706 Walnut St., Cincinnati, O., consult. engrs.

▲† **N. Y., Plattsburgh**—HYDRANT REFUELING SYSTEM—U. S. Eng., 111 E. 16 St., New York, Zone 3, hydrant refueling sys., Plattsburgh Air Force Base, $1,000,000-$3,000,000. Seelye, Stevenson, Value & Knecht; 101 Park Ave., New York, Zone 17, engrs. CD 10/20.

▲† **N. Y., Syracuse**—AIRPORT IMPRVS.—U. S. Eng., 111 E. 16 St., New York, Zone 3, paving, addns. to TADC Bldg. at Air National Guard facilities, $500,000-$1,000,000, Ralph Eberlin, 123 E. 77 St., New York, engrs.; trunk sewer, $100,000-$500,000, O'Brien & Gere, 446 James St., Syracuse, engrs.; plans by Cowell-Robinson, 25 W. 43 St., New York, Zone 36, misc. bldgs., $1,000,000-$3,000,000; infirmary and chapel, $100,000-$500,000; plans by Mayer & Whittlesey, 31 Union Square W., New York, Zone 3, air reserve training center, $100,000-$500,000, all above work at Hancock Field.

Tex., Midland—TERMINAL—City plans by J. J. Black, 801 W. Kansas St., Midland Air Terminal Passenger Depot. $558,900. CD 12/8.

AMERICANS ABROAD

▲† **England, London**—EMBASSY—Dpt. of State, Foreign Bldgs., Wash., D. C., U.S.A., plans by Eero Saarinen & Assocs., West Long Lake Rd., Bloomfield Hills, Mich., U.S.A., U. S. Embassy. $3,000,000. Work to start in 1957.

LATIN AMERICA

▲ **Mexico, Coatzacoalcos**—FERTILIZERS FACTORY—Guanos y Fertilizantes, Inq. Ferrer Galvan, dir., Mexico City, plans fertilizers factory. $16,000,000.

Mexico, Mexico City—HYGIENE CENTER—Srita. de Educacion Publica, Mexico City, plans school children's hygiene center. $500,000.

▲ **Mexico, Tampico**—FACTORY—Industria Nacional Quimico Farmaceutica, Piza Republicas 7, Mexico City, plans insecticides factory. $5,600,000. Jorge Madrid, Antonio Balvanera, c/o owner, engr.

▲ **Paraguay—Bolivia**—OIL LINE—Chaco Pipe Line & Refinery Corp., Concepcion, Paraguay, plans 450 mi. crude oil line from refinery near Concepcion, Paraguay to Glenn McCarthy's wells in Bolivia. $48,000,000.

▲ **Venezuela**—OIL LINE—Sinclair Oil Corp., 2119 Lofland St., Houston, Tex., 240 mi. crude oil line from Silvestre Fields in State of Barinas to Puerto Cabello on Caribbean Sea Coast. $25,000,000.

PUBLIC BUILDINGS

Calif., Anderson—SCHOOLS—Cascade Union Elementary School Dist., Anderson, voted bonds, new classroom bldg. and school addns. at Meadow Lane School. $500,000. CD 3/10/54.

Calif., Azusa—SCHOOL—Citrus Union High School Dist., 18824 E. Foothill Blvd., plans by Neptune & Thomas, 1560 N. Colorado St., Pasadena, 2nd increment, Azusa High School, $842,000. CD 2/17/54.

Calif., Boonville—HIGH SCHOOL—Anderson Valley Unified School Dist., Boonville, voted bonds, high school, $800,000. Ernest F. Winkler, 251 Post St., San Francisco, archt. CD 11/23.

▲ **Calif., Crescent City**—SCHOOLS—Crescent Union Elementary School Dist., Crescent City, Bess Maxwell School, $553,349; rehabilitating Crescent-Elk Elementary School, $564,006.

▲ **Calif., Hayward**—SCHOOL—La Vista Elementary School Dist., 27845 Western Rd., plans by Anderson & Simonds, 2800 Park Blvd., Oakland, school addns. $3,350,000. Bonds voted.

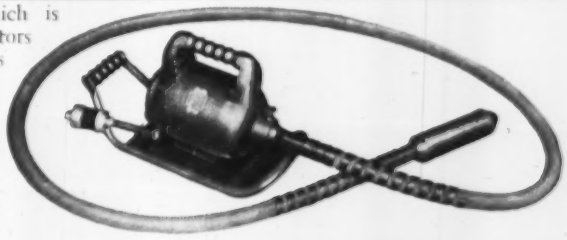
Calif., Kerman—SCHOOL ADDNS.—Kerman Union High School Dist., 2545 N. Madera St., bond election May 18, school addns., $525,000. Horn & Mortland, 2016 Merced St., Fresno, archts.

Calif., Livermore—SCHOOL—Livermore Joint Union High School Dist., P. O. Box 272, bond election Mar. 20, school addns. $800,000.

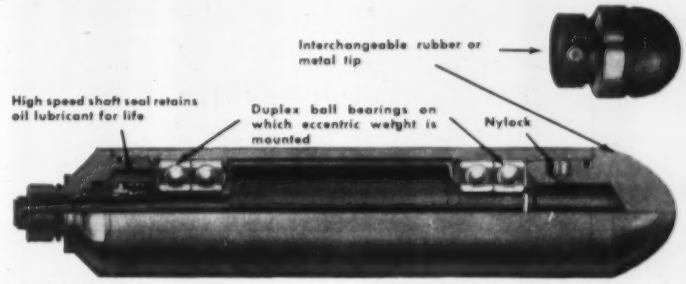
Calif., Long Beach—BUSINESS and TECHNOLOGY DIVISION—Long Beach Bd. Educ., 715 Locust Ave., plans by Hugh R. Davies, Security First Natl. Bldg., business and technology division alterations, addns. $650,000. CD 11/16/50.

In Concrete Vibrators, it's the WALLOP that counts!

"Wallop", which is what many contractors call amplitude, is what it takes to vibrate a stiff mix—quickly and thoroughly. Recent tests prove that the efficiency of vibration increases in proportion to the amplitude. Therefore, Stow Manufacturing Co., Binghamton, N. Y., has developed a lightweight, rugged electric vibrator that packs a terrific wallop.



This wallop is achieved by the unique vibrator head, shown below, driven by a powerful 2 HP motor which delivers 9000 vibrations per minute to the mix.

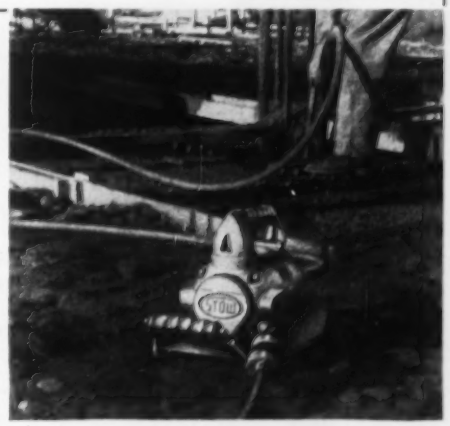

Interchangeable rubber or metal tip
High speed shaft seal retains oil lubricant for life
Duplex ball bearings on which eccentric weight is mounted
Nylock

Take a look at this vibrator head. It is 10 inches long, and available in diameters of 1⅜, 2 and 2½ inches, capable of 9000 VPM. Vibrations are achieved by use of an eccentric weight mounted in special high speed duplex ball bearings at each end. The outside of the head is case hardened, for extra long wear, and it has a replaceable tool steel tip. Stow estimates that these two improvements alone will double the life of the heads.

CONSTRUCTION MEN report that they like the light weight, the long life, the low replacement cost, and the terrific wallop of these heads. Weight of the 1⅜" head is about 5 lbs.; the 2" head about 7½ lbs.; the 2½" head, about 9 lbs. The cost of this head is less than ¼ the cost of expensive "motor-built-in" type heads.

The 1⅜" head is also available with a hard rubber tip for use where plywood forms are being used.

For more information about the complete line of STOW concrete electric and gasoline vibrators, vibrating screeds and rotary trowels, contact your STOW distributor, or write for STOW catalog 560.



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The New ATLANTIC PNEUMATIC CONCRETE SMASHER

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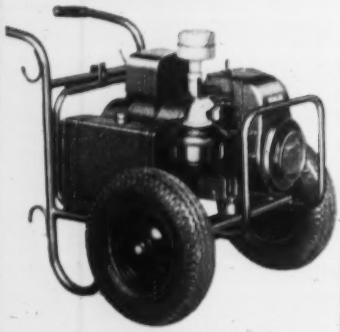

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▲ **Calif., Palo Alto**—SCHOOLS—Palo Alto City Unified School Dist., P. O. Box 450, bond election May 18, 3 elementary schools, Junior High School and site for high school. $2,000,000. CD 6/15/54.

Calif., San Gabriel—CITY HALL—City, $500,000, bond election Apr. 10, city hall.

▲ **Calif., San Jose**—SCHOOL—Mount Pleasant Elementary School Dist., 14275 Candler Ave., bond election Apr. 24, school, Story Rd. near Raehampton Ave. $1,200,000.

▲ **Calif., San Mateo**—SCHOOLS—San Mateo Union High School Dist., 650 N. Delaware St., bond election May 18, Mills High School and existing schools addns. $3,030,000. CD 5/27/53.

Calif., Tulare—SCHOOL—Tulare City Elementary School Dist., 600 N. Cherry Ave., voted bonds Feb. 17, Maple, Garden, Roosevelt Schools addns., and new 7th and 8th Grade School. $850,000. CD 2/28/55.

▲ **Colo., Golden**—SCHOOL OF MINES—State of Colorado, Colorado School of Mines, Golden, two academic-quadrangle studies, dining commons, research and graduate study, auditorium and student union bldg., married student housing buildings for geophysics, mining, basic sciences and engineering, $20,000,000. Pereira & Luckman, 920 Sunet Blvd., Los Angeles, Calif., consult. engrs., archts.

▲ **Colo., Grand Junction**—SCHOOLS—School District No. 51, Grand Junction, $2,500,000 bond election Apr. 1, Junior-Senior High School $1,000,000; elementary school $650,000. CD 8/22/52.

Conn., Wethersfield—TOWN HALL, etc.—Town, Town Hall, plans by Jeter & Cook, 36 Pearl St., Hartford, town hall and library, $560,000. CD 7/5/50.

▲ **Del., Claymont**—SCHOOL—Claymont Special School Dist., voted bonds, school bldg. program. $1,680,000. Massena & DuPont, 704 Delaware Ave., Wilmington, archts.

Del., Lewes—SCHOOL—Lewes Special School Dist., Lewes, voted bonds, Lewes Elementary & High School addns., $851,000. George E. Pope & Albert Kruse, 911 Washington St., Wilmington, archts. CD 11/5/54.

▲ **Del., Milford**—SCHOOLS—Milford Special School Dist., Milford, voted bonds, elementary school $750,000; Lake Ave School addns., alterations, $750,000. Whiteside, Moeckle & Carbonell, 909 Tatnall St., Wilmington, archts.

▲ **Del., Stanton**—SCHOOL—Stanton School Dist., Stanton, plans by G. Morris Whiteside, Wm. G. Moeckel, and Joseph E. Carbonell, 909 Tatnall St., Wilmington, Junior High School, $1,000,000. CD 2/21.

▲ **Idaho, Pocatello**—HIGH SCHOOL—School Bd., Pocatello, plans by A. Dropping, 38 Mesa Dr. Boise, high school, $1,225,000.

Idaho, Taylor (mail Moreland)—SCHOOL—School Dist. 21, Arimo, voted bonds, school $800,000.

Ill., Cicero—SCHOOL—School Dist. 99, Cicero, voted bonds, school $850,000. Frank Polito, 168 N. Michigan St., Chicago, Zone 1, archt.

▲ **Ill., Urbana**—DORMITORIES—University of Illinois, Urbana, plans by Schaeffer & Wilson, assoc. archts., People's Bank Bldg., Bloomington, two dormitories, $1,165,000. CD 3/18/53.

▲ **Ind., Kokomo**—HOSPITAL—Comes. Howard Co., Court House, 105-bed county hospital, $2,000,000.

Iowa, Albia—PLANT—City, City Hall, mfg. plant, $100,000. Maloney Co., Cleveland, O., lessee.

▲ **Ind., New Albany**—SCHOOL—Bd. Educ., Glen D. Barkes, supt. constr., Junior High School. $1,814,000.

Ind., Terre Haute—SCHOOL—Honey Creek Twp., Terre Haute, plans by Yeager Architects, Inc., 822 Ohio St., 1 and 2 story, structural steel, rein.-con. secondary school. $880,000.

Ky., Fort Knox—SCHOOL—Fort Knox Independent School Dist., Fort Knox, plans by William G. Crawford, 4030 Alton Rd., Louisville, 1 story, 352x850 ft., Junior High School, $900,000.

▲ **Mich., Farmington**—SCHOOL—City, 33312 Grand River, $2,000,000 bond election Mar. 26, Junior High School, and 3 elementary schools. CD 4/9/54.

▲ **Mich., Garden City**—SCHOOL—City, Douglas F. Waddell, clk., voted $3,300,000 bonds Feb. 20, schools, W. T. Anicka & Assoc., 2300 Washtenaw St. Ann Arbor, archts. CD 1/31.

▲ **Mich., Milan**—SCHOOLS—Bd. Educ., Milan School Dist., $1,500,000 bond election Mar. 20, high school, two grade school addns.

▲ **Mich., Wayne**—SCHOOLS—Bd. Educ., Wayne Twp., 34918 Sims St., voted $9,000,000 bonds, Feb. 20, school program incl. Senior High School, Junior High School, elementary schools. CD 1/23.

† **Minn., Moorhead**—POST OFFICE, etc.—General Services Admin., Pub. Bldgs. Service, 2306 E. Bannister Rd., Kansas City 14, Mo., post office and federal office $500,000.

▲ **Mo., Pattonville**—SCHOOL—Pattonville Consolidated School Dist. R-3, Bd. Educ., M. A. Holman, supt. Schools, St. Charles Rock Rd., Zone 21, voted $650,000 bonds Feb. 18, addns. Junior High School and elementary schools. $770,000.

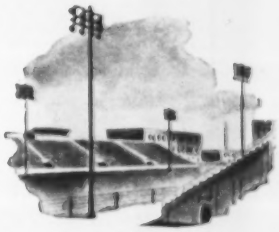
▲ **Mo., Rolla**—DORMITORY—Missouri School of Mines & Metallurgy, Rolla, and c/o Curators of University of Missouri, Jesse Hall, Columbia, plans by Hellmuth, Obata & Kassabaum, 825 Locust St., St. Louis, Zone 1, 3 dormitory bdgs., food service center (cafeteria), $1,228,000. CD 9/15.

▲ **Mo., Sedalia**—SCHOOL—Bd. Educ. defeated $1,800,000 bonds Feb. 7, schools, D. R. Sandford & Sons, 800 Westport Rd., Kansas City, Mo., archts. CD 12/27.

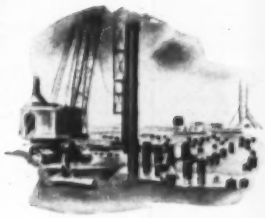
(Continued on page 104)

Street Lighting Poles

Highway Lighting Poles



Floodlighting Poles

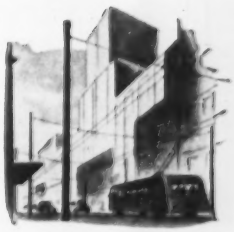


Foundation Piles

Sign Poles

Antenna Poles

Overhead Sign Supports



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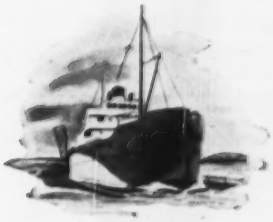
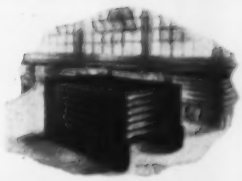


Booms and Masts



Material Handling Equipment

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UNION METAL

THE UNION METAL MANUFACTURING COMPANY

CANTON 5, OHIO

(Continued from page 101)

▲ **Neb., Lincoln**—CITY-COUNTY—City, City Hall, $3,500,000 bond election June 26, city-county bldg. CD 1/23.

▲ **Neb., Lincoln**—HOSPITAL—City, City Hall, $4,500,000 bond election June 26, city hospital or medical center.

▲ **Neb., Lincoln**—LIBRARY—City, City Hall, $1,200,000 bond election June 26, main library, Hazen & Robinson, 305 Stuart Bldg., archts. CD 2/1.

Neb., Omaha—SCHOOL—School Dist. 66, Douglas Co., 1162 95 St., plans by L. A. Daly Co., Insurance Bldg., Hillside School, 76 and Western Aves., near here. $500,000. CD 1/11.

▲ **N. J., Hopewell**—SCHOOL—Hopewell Twp. Bd. Educ., Hopewell, voted bonds, Jan. 26, high school, $1,600,000. Grady & Myer, 219 W. State St., Trenton, consult. engrs. Hankin, Stull & Backes, 495 W. Hanover St., Trenton, archts. CD 1/16.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, plans by Martyn N. Weston, 44 Court St., Zone 2, addn. to Junior High School 50, South Third St. and Driggs Ave., Proj. P-842, $2,300,000. CD 6/23.

▲ **N. Y., New York**—OFFICE—City, Dpt. P. Wks., Municipal Bldg., Zone 7, city executive OFFICE in block bounded Duane St., Cardinal Hayes Place, Park Row and Pearl St., Proj. PW-162, $4,000,000.

▲ **N. Y., Rye**—SCHOOL—Bd. Educ. plans by Perkins & Will, 171 E. Post Rd., White Plains, Senior High School, Rye Neck, $1,500,000. To go ahead in Summer 1956.

▲ **N. Y., White Plains**—SCHOOL—Bd. Educ., 279 Hamilton Ave., plans by Perkins & Will, 171 E. Post Rd., Senior High School, $7,000,000.

N. Y., Yonkers—SCHOOL—Bd. Educ., elementary school in Bronxville Heights, $950,000.

▲ **O., Cincinnati**—SCHOOLS—Bd. Educ., 608 E. McMillan St., plans by Potter, Tyler, Martin & Roth, 128 E. 6th St., 2 story South Avondale School, west side of Carll St., $800,000, Bids December 1956; plans by James E. Allan, 914 Main St., 2 story, brick Whittier School, Hawthorne Ave., $1,000,000. Bids September 1956. CD 2/28/55.

▲† **O., Cincinnati**—POST OFFICE ANNEX—General Services Admin., General Services Bldg., Wash. 25, D. C. 375,000 sq. ft. post office annex, Dalton and Liberty Sts. $4,000,000.

▲ **O., Cleveland Heights**—SCHOOLS—Bd. Educ., 1749 Lee Rd., Cleveland, Zone 18, plans by Spahn & Barnes, 1950 Lee Rd., Cleveland, Zone 18, high school addns., $414,600; classrooms for Frank R. Wiley Junior High School, $410,000; plans by Outcalt, Guenther & Assoc., 13124 Shaker Square, Cleveland, Zone 20, replace frame Northwood School, $457,100; Canterbury School addn., $338,000; Roosevelt Junior High addns., $515,000. CD 1/25.

O., Indian Hill—SCHOOL—Indian Hill School Dist., Drake Rd., plans by Potter, Tyler, Martin & Roth, 128 E. 6th St., Cincinnati, 1 story, brick school. $875,000. Bids late summer. CD 11/16.

O., Madeira—HIGH SCHOOL—Bd. Educ., Miami Ave., 1 story high school addn. $825,000.

▲ **O., Oxford**—FINE ARTS, etc.—Bd. Trustees Miami University, John D. Millett, pres., Oxford, fine arts bldg., south of new University Center, $1,000,000; stores and service bldg., on bluff north of State Rte. 73, $400,000; elevators, utility lines, driveways, general campus imprvs., $340,617.

O., Toledo—SCHOOL—Bd. Educ., Springfield School Dist., Toledo, $500,000 bond election May 8, school.

▲ **Pa., Bloomsburg**—CLASSROOM, etc.—General State Auth., 18 and Herr Sts., Harrisburg, general classroom, $400,000; men's dormitory, $720,000; auditorium, $528,000, at Bloomsburg State Teachers College. A. F. Jones, c/o owner, ch. engr. CD 12/9/49.

Pa., Bristol—SCHOOL—Bristol Twp. School Dist., plans by Joseph Wigmore, 117 S. 17 St., George Taylor Elementary School, $500,000, Robert A. C. Gilfillan, 117 S. 17 St., Phila., consult. engr. CD 1/19.

▲ **Pa., Clarion**—LIBRARY, etc.—General State Auth., 18 and Herr Sts., Harrisburg, library and administration bldg. $400,000; classroom, $360,000; women's dormitory, $576,000; auditorium, $350,000, at State Teachers' College. A. F. Jones, c/o owner, ch. engr.

▲ **Pa., East Stroudsburg**—DORMITORY, etc.—General State Auth., 18 and Herr Sts., Harrisburg, women's dormitory, $900,000; library and administration bldg., $560,000; science bldg., $350,000; heating plant, $200,000, at East Stroudsburg State Teachers' College. A. F. Jones, c/o owner, ch. engr. CD 11/28/49.

▲ **Pa., Edinboro**—DORMITORIES, etc.—General State Auth., 18 and Herr Sts., Harrisburg, men's dormitory, $520,000; women's dormitory, $360,000; library, $350,000; electrical distr. system, $120,000, at Edinboro State Teachers' College. A. F. Jones, c/o owner, ch. engr. CD 12/23/49.

▲ **Pa., Hamburg**—MEDICAL SERVICES, etc.—General State Auth., 18 and Herr Sts., Harrisburg, medical services bldg., $660,000; addn. to kitchen, cafeteria and diving facilities, $480,000; laundry, $200,000, at Hamburg State Tuberculosis Hospital. A. F. Jones, c/o owner, ch. engr.

Pa., Harrisburg—LABORATORY—General State Auth., 18 and Herr Sts., laboratory for State Health Dpt., $691,200. A. F. Jones, c/o owner ch. engr.

▲ **Pa., Hershey**—TRAINING SCHOOL—General State Auth., 18 and Herr Sts., Harrisburg, training school for Pennsylvania State Police, $1,200,000. A. F. Jones, c/o owner, ch. engr. CD 5/16/47.

▲ **Pa., Hollidaysburg**—PATIENTS, etc.—General State Auth., 18 and Herr Sts., Harrisburg, patients' bldg., $1,280,000; auditorium and gymnasium, $350,000; stores bldg., $220,000; combined garage and maintenance bldg., $128,000, at Hollidaysburg State Hospital. A. F. Jones, c/o owner, ch. engr.

▲ **Pa., Indiana**—DORMITORIES—General State Auth., 18 and Herr Sts., Harrisburg, men's dormitory, $792,000. women's dormitory, $520,000; science bldg., $350,000; music and art bldg., $440,000; library, $520,000; heating plant, $520,000, at Indiana State Teachers' College. A. F. Jones, c/o owner, ch. engr. CD 7/11/52.

Pa., Johnsonville—SCHOOL—Centennial Junior School Dist., constr. Junior High School, $750,000.

▲ **Pa., Kutztown**—DORMITORY, etc.—General State Auth., 18 and Herr Sts., Harrisburg, men's dormitory, $630,000. science bldg., $350,000; classroom $350,000, at Kutztown State Teachers' College, A. F. Jones, c/o owner, ch. engr.

▲ **Pa., Mayview**—ADMISSIONS, etc.—General State Auth., 18 and Herr Sts., Harrisburg, admissions bldg., $1,600,000; bldg. for male disturbed and semi-disturbed patients, $1,280,000; auditorium and chapel, $520,000; male ergotherapy bldg., $960,000, at Mayview State Hospital, A. F. Jones, c/o owner, ch. engr. CD 11/28/49.

▲ **Pa., Norristown**—BUILDING, etc.—General State Auth., 18 and Herr Sts., Harrisburg, replacement of bldg. No. 1, $1,200,000; bldg. for senile men, $1,600,000; remodel boiler plant and adjacent coal storage bldg. as central store house, $400,000, at Norristown State Hospital. A. F. Jones, c/o owner, ch. engr. CD 2/10/47.

▲ **Pa., Phila.**—BUILDINGS—General State Auth., 18 and Herr Sts., Harrisburg, altering bldgs. E-5 and E-7, $1,120,000; altering bldgs. C-2 and C-4, $760,000; recreational therapy bldg., $668,000; altering bldg. E-8, $400,000; grounds lighting system, $480,000, at Philadelphia State Hospital. A. F. Jones, c/o owner, ch. engr. CD 2/10/47.

Pa., Polk—COLD STORAGE, etc.—General State Auth., 18 and Herr Sts., Harrisburg, remodel cold storage and storeroom bldg. and constr. new storage space, $350,000; complete remodeling main kitchen bldg. $640,000; revamp electrical system, $400,000, at Polk State School. A. F. Jones, c/o owner, ch. engr.

▲ **Pa., Slippery Rock**—DORMITORY, etc.—General State Auth., 18 and Herr Sts., Harrisburg, men's dormitory, $1,080,000; women's dormitory, $558,000; auditorium, $528,000, at Slippery Rock State Teachers' College. A. F. Jones, c/o owner, ch. engr.

▲ **Pa., Somerset**—ADMISSION, etc.—General State Auth., 18 and Herr Sts., Harrisburg, admission bldg.,

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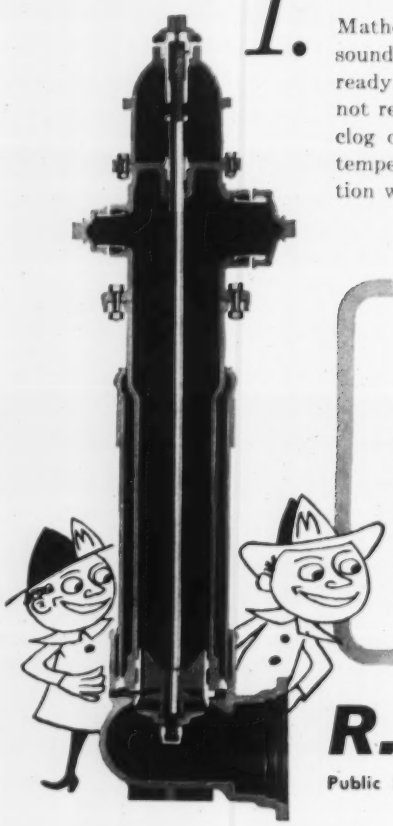
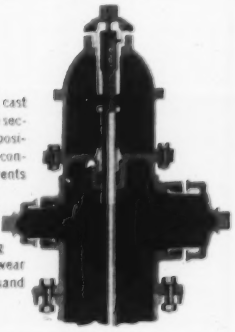
You need ask two questions



1. Will they be ready for instant use in an emergency?

Mathews Hydrants are so simply and soundly constructed that they are always ready. Water, ice and sandy deposits cannot reach key parts to rust or freeze, or clog operation. In any weather and all temperatures, Mathews Hydrants function with a minimum of maintenance.



Stuffing box plate, cast integral with nozzle section, provides a positively leakproof construction. It prevents any water or sand from reaching the operating thread. No rusting, freezing or clogging. No wear on thread through sand abrasion.

R. D. WOOD

Public Ledger Building, Independence Square
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1,200,000; male patients bldg., $1,000,000; chapel, auditorium, and gymnasium, $350,000; maintenance shop, $200,000, at Somerset State Hospital. A. F. Jones, c/o owner, ch. engr. CD 9/29/49.

▲ **Pa., Souderton**—SCHOOL—Souderton School Bd. plans by H. F. Everett & Assoc., Commonwealth Bldg., Allentown, Junior and Senior High School addn. $1,750,000. S. W. Herring, 512 Hamilton St., Allentown, consult. engr. CD 10/6.

▲ **Pa., Spring City**—STOREROOMS, etc.—General State Auth., 18 and Herr Sts., Harrisburg, remodel old power house into storerooms and shops, $400,000; expand and modernize kitchens attendants dining room, patients' dining rooms, $640,000; addnl. refrigeration in male and female colonies, $350,000, at Pennhurst State School. A. F. Jones, c/o owner, ch. engr. CD 2/19/48.

Pa., Springfield—SCHOOL—Springfield School Dist., constr. Junior High School alterations, Senior High School addn. $500,000.

▲ **Pa., Torrance**—ADMISSION, etc.—General State Auth., 18 and Herr Sts., Harrisburg, admission bldg., $2,400,000; repairs to steam distr. system, $152,000; constr. carpenter, electrical, plumbing, and machine repair shops, $243,000; repairs to electrical distr. system, $140,000, at Torrance State Hospital. A. F. Jones, c/o owner, ch. engr.

▲ **Pa., University Park**—ENGINEERING, etc.—General State Auth., 18 and Herr Sts., Harrisburg, general engineering bldg. and ore petroleum laboratory, $4,800,000; completion of Burrows Bldg., $1,480,000; completion of Home Economics South Bldg., $1,320,000; completion electrical engineering bldg., $1,200,000; maintenance service bldg., $1,400,000; meats laboratory, $440,000; two brooder houses for turkeys, $320,000; swine research facilities, $220,000; extens., revisions to utility services, $227,000; horticultural greenhouses and horticultural field service bldg., $412,000; water storage facilities, $240,000 at Penna State University. A. F. Jones, c/o owner, ch. engr.

Pa., Warminster—SCHOOL—Warminster School Dist. plans by John S. Carver, 2112 Spruce St., Phila., elementary school, York Rd. and Valley Rd. $500,000.

▲ **Pa., Warren**—STORAGE and REFRIGERATION, etc.—General State Auth., 18 and Herr Sts., Harrisburg, storage and refrigeration, $1,200,000; male geriatric bldg., $1,000,000; installing automatic sprinkler sys., $120,000; water supply system, $220,000; repairing sewerage sys., $220,000, Warren State Hospital. A. F. Jones, c/o owner, ch. engr.

▲ **Pa., Wernersville**—ADMISSION—General State Auth., 18 and Herr Sts., Harrisburg, admission bldg. at Wernersville State Hospital. $1,200,000. A. F. Jones, c/o owner, ch. engr.

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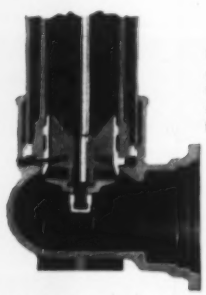
only about fire hydrants:

2. Can the hydrant be quickly replaced if broken in a traffic accident?

When you have Mathews Hydrants on the job, neighborhood fire protection can suffer only momentary interruption. A broken Mathews Hydrant can be replaced with a new barrel in less than half an hour, and *without excavating.*



Main valve, true compression type, opens against and closes with water pressure. The higher the pressure, the tighter the valve. When hydrant is broken in traffic accident, there's no leakage with consequent dangerous loss of pressure.

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Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

▲ **Pa., West Chester**—DORMITORY, etc.—General State Auth., 18 and Herr Sts., Harrisburg, women's dormitory, $900,000; men's dormitory, $1,080,000; music classroom, $350,000; dining room and kitchen, $800,000; heating plant, $600,000, West Chester Teachers' College. A. F. Jones, c/o owner, ch. engr.

▲ **Pa., Woodville**—PATIENTS, etc.—General State Auth., 18 and Herr Sts., Harrisburg, tuberculosis patients bldg., $1,920,000; revamp administration quarters, dining rooms, chapel and C-D portion of Ward 6, $480,000; administration bldg., $350,000, at Woodville State Hospital. A. F. Jones, c/o owner, ch. engr.

▲ **Tex., Amarillo**—SCHOOL—Amarillo Independent School Dist., Amarillo, plans by Howard Ensign & Henry Fowler, 1312 W. 15 St., Junior High School, $1,250,000. CD 10/13.

Tex., Denton—DORMITORY, etc.—State Bd. Regents, Tribune Bldg., Austin, men's dormitory, dining service lounge bldg., North Texas State College. $800,000.

Tex., Fort Worth—HEALTH CENTER—City, Dr. Jack Garrison, mayor, and Gus Brown, co. judge, City Hall, plans by Herman G. Cox, 415 N. P. Anderson Bldg., V-shaped, one 2 story wing, one 1 story wing, masonry, City-County Health Center, Camp Bowie Blvd. and Arch Adams. $720,000.

Tex., Irving—PUBLIC—City, City Hall, public bldgs. group, $500,000. CD 6/30/52.

▲ **Tex., McKinney**—HOSPITAL—Collin Co., Court House, plans by Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, county hospital. $1,000,000.

▲ **Utah, Salt Lake City**—SCHOOLS—Bd. Educ., 440 E. First South St., plans by William F. Thomas, Union Pacific Bldg. Annex, Northwest Junior High School at 1250 North 13th West, $1,600,000; plans by R. Lloyd Snedaker, 706 Utah Saving & Trust Bldg., Indian Hills Elementary School, $500,000. CD 4/27/54.

Va., Alexandria—POLICE STATION—City, City Hall, plans by Willgoos & Chase, 300 Montgomery St., police station, $500,000. CD 1/18/51.

▲ **Va., Fairfax**—SCHOOLS—Bd. Educ., Fairfax, plans by Saunders-Eubank, 121 S. Columbus St., Alexandria, elementary school, Plymouth Haven, $430,380; plans by Bailey & Patton, 1408 N. Fillmore St., Arlington, elementary school, Kent Gardens, $430,380; plans by John M. Walton & Assoc., 2049 N. 15 St., Arlington, elementary school, Langley Forest, $553,500. CD 11/11.

Wash., Pasco—JUNIOR COLLEGE—School Bd., Pasco, plans by W. L. Wulff, Realty Bldg., Spokane, Junior College Bldgs., incl. vocational technical training bldgs. and heating plant. $600,000.

▲ **Wis., Appleton**—SCHOOL—Bd. Educ. plans by R. N. Levee & Assocs., 1000 W. College Ave., Junior High School. $1,000,000.

▲ **Wyo., Casper**—SCHOOL—Casper Midwest School Dist., 930 S. Elm St., voted $1,000,000 bonds Jan. 31, Junior High School. CD 1/11.

▲ **B. C., Vancouver**—HIGH SCHOOL—Vancouver School Bd., 1595 W. 10 St., plans by E. D. King, 1595 W. 10 Ave., 4 story high school, 49 and Argyle Sts. $1,100,000. CD 12/18/53.

▲ **Que., Quebec City**—NORMAL SCHOOL—Provincial Dpt. P. Instruction, Parliament Bldgs., plans by Maurice Maingay, 565 St. Jean St., and J. Aurele Bigonesse, 3 Parloir St., normal school. $2,000,000. Leo Dufresne, 915 St. Cyrille St. W., consult. engr. CD 2/1.

Sask., Weyburn—FEDERAL—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., 2 story, bsmnt., 81x140 ft., federal bldg. $500,000. A. A. Anderson, c/o owner, ch. engr.

COMMERCIAL BUILDINGS

Ala., Birmingham—HOSPITAL ANNEX—Jefferson TB Sanatorium, 3800 Montgomery Hy., plans by George Turner, American Life Bldg., hospital annex, $360,000. CD 1/13.

▲ **Ariz., Yuma**—HOUSING—Procurement Office, 5750th Air Defense Wing (Weapons) Yuma County Airport, Yuma, plans by Charles G. Polacek, 2805 F St., Phoenix, 320 units of housing, Yuma County Airport, $4,000,000. CD 1/31.

▲ **Calif., Azusa**—DWELLINGS—Frank Halterman, 13832 E. Valley Blvd., Puente, plans by Robert F. Duff & Assoc., 5549 N. Rosemead Blvd., Temple City, 94 frame, stucco dwellings, Tract 21786, N. E. of Vincent Ave. and Newburg St. $1,000,000.

Calif., Berkeley—CHURCH SCHOOL—Presbyterian Church c/o Donald Powers Smith, archt., 133 Kearny St., San Francisco, church school. $400,000.

Calif., Los Angeles—DWELLINGS—Broadway Homes, 5650 W. 3 St., 82 frame, stucco dwellings, McLennan Ave., Tract 18887. $900,000.

▲ **Calif., Manhattan Beach**—HOSPITAL—South Bay Hospital Dist., c/o Walker, Kallorizes & Klingerman, archts., 488 S. San Vicente Blvd., Los Angeles, 150-bed, reinforced concrete hospital. $3,000,000.

Calif., Pacoima—DWELLINGS—Keystone Constr. Co., 218 S. Highland Ave., Los Angeles, 79 frame, stucco dwellings, Debell, Beechy, Montague, and Sandusky Sts., Tract 20541. $800,000.

Calif., San Francisco—HEADQUARTERS—Marine Firemen's Union, 150 Broadway, plans by John Gloe, 362 Clay St., union headquarters, First and Folsom Sts. $500,000.

Calif., West Covina—DWELLINGS—Cunningham Development Co., 500 S. Walnut St., Anaheim, 79 frame, stucco dwellings, Trace 20622. $800,000.

Colo., Greeley—BOWLING ALLEY—Columbine Recreation Corp., 1628 22 Ave., 1 story brick bowling alley, $400,000. Nat S. Sachter, 1321 Bannock St., Denver, consult. engr.-archt.

(Continued on page 106)

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Conn., **East Hartford**—CONVENT—St. Christophers Parish, Rev. Henry J. Murphy, pastor, 36 Cambridge Dr., plans by Walter Furey, 106 Main St., Thompsonville, convent, Brewer St. $350,000.

▲ Conn., **Hamden**—HOUSES—Linus L. Darley, 200 Knoll Dr., Mount Carmel, plans by Linus L. Darley, 200 Knoll Dr., Mount Carmel, 30 houses, $1,140,000. Clarence Blair, Associates, 100 Crown St., New Haven, consult. engrs.

Conn., **Hamden**—ACADEMY—Missionary Zelatrices of the Sacred Heart, Benham St., plans by Polak & Sullivan, 1397 Chapel St., New Haven, academy bldg. to be used as high school for girls. $500,000.

Conn., **New Haven**—SCHOOL—Archdiocese of Hartford, 140 Farmington Ave., Hartford, plans by Polak & Sullivan, 1397 Chapel St., New Haven, St. Bernadettes Parochial School, $350,000. Arthur G. Beaulieu Assocs., 2348 Whitney Ave., Hamden, consult. engrs. CD 11/23.

Conn., **New Haven**—SCHOOL—St. Aeden's Roman Catholic Church, 112 Fountain St., plans by Schilling & Goldbecker, 18 Trumbull St., school addn., new convent. $500,000. Hill & Harrigan, 909 Whalley Ave., consult. engrs. CD 10/12.

Conn., **Wallingford**—OFFICE—American Cyanmid Co., S. Cherry St., plans by Pederson & Tilney, 111 Whitney Ave., New Haven, office. $500,000. Henry A. Pfisterer, 111 Whitney Ave., New Haven, consult. engr.

▲ Conn., **West Hartford**—HOUSING—Cooper & Schneider West Hill Park, Newington, 132-house development, Hunter Park, Fernbell Lane, $2,640,000.

▲ Fla., **Bal Harbour Village**—APARTMENT—Irving Feldman, B. F. Ganbaum, Irving Feinberg, c/o Polevitzky, Johnson Assocs., archts., 250 N.E. 18 St., Miami, 14 story, 77-unit, 150x160 ft., T-shaped apartment with swimming pool "Carton Terrace", 15 Ocean Front, $2,000,000.

Ill., **Edgemont (East St. Louis, P. O.)**—TELEPHONE EXCHANGE Southwestern Bell Telephone Co., 1010 Pine St., St. Louis 1, Mo., plans by Charles E. King, 1'a N. Illinois St., Belleville, 1 story, bsmnt., rein.-con., frame, telephone exchange, 88 St. at State St. $400,000. Bids soon.

Ill., **Hinsdale**—MEDICAL CENTER—Owner, c/o Philip Duke West, archt., 33 1 st., medical center. $600,000.

Ill., **Kankakee**—HOSPITAL—St. Mary Hospital. 192 S. 5 St., plans by Fugard, Burt, Wilkinson & Orth, 520 N. Michigan St., Chicago, Zone 11, hospital addn. $700,000.

Ind., **East Gary**—SHOPPING CENTER—Robt. Stendahl, 2773 DeKalb St., Gary, plans by Fred W. Collins, 545 Broadway, Gary, shopping center, Central Ave. and Morgan St. $600,000.

▲ Ind., **Gary**—HOSPITAL—Methodist Hospital, 540 Tyler St., plans by Fugard, Burt, Wilkinson & Orth, 520 N. Michigan St., Chicago 11, Ill. hospital addn. $1,200,000. Beine, Hall & Curran, 647 Broadway, assoc. archts.

▲ Iowa, **Davenport**—SCHOOL—Supt. Schools, Catholic Diocese of Davenport, 410 Brady St., constr. Assumption High School. $1,500,000.

Iowa, **Mason City**—HOSPITAL—Park Hospital Clinic, Mason City, plans by Ellerbe & Co., E. First Natl. Bank Bldg., St. Paul, Minn., hospital addn. $500,000. Bids about Apr. 1.

Mass., **Northampton**—DORMITORY—Smith College, College Hall, Northampton, dormitory (in memory Mrs. Dwight W. Morrow), $500,000.

▲ Mass., **Northampton**—DORMITORIES—Smith College, College Hall, plans by Skidmore, Owings & Merrill, 575 Madison Ave., New York 22, N. Y., two dormitories on campus to be called Sophia Smith House and Jacob Ziskind House, $1,400,000. CD 6/9/54.

▲ Mich., **Farmington**—HOME, etc.—American Baptist Home Mission Society, Wesley O. Walker, chn., 824 Farwell Bldg., Detroit, Baptist Home for Aged, Chapel Library and cottages. $1,000,000.

Mo., **Liberty**—DORMITORY—William Jewell College, Liberty, plans by Edw. W. Tanner & Assoc., 310 Ward Parkway, Kansas City, Mo., student union and dormitory, $845,000. Bids in 90 days. CD 10/31.

▲ Mo., **St. Louis**—HOME—The Good Samaritan Home for the Aged, H. H. Gieselman, pres., 4500 Washington Ave., Zone 8, plans by Hellmuth, Obata & Kassabaum, 825 Locust St., Zone 1, and Walter P. Manske, assoc. archt., 9947 Riverview Dr., Zone 15, 4 story, brick, concrete, steel home for aged, 5200 S. Broadway. $1,000,000. CD 2/2/55.

▲ Mo., **Springfield**—HOSPITAL—Burge Hospital, 440 S. Market St., hospital addn. $1,000,000. CD 9/9/54.

Neb., **Nebraska City**—HOSPITAL—St. Marys Hospital, Nebraska City, plans by John Latenser & Sons, 1307 Farnam St., Omaha, hospital addn. $500,000.

N. J., **Atlantic City**—MOTEL—Herman Orman, Guarantee Trust Bldg., plans by A. L. Brooks, 1616 Pacific Ave., motel, Pacific Ave. $344,000.

N. J., **Burlington**—SCHOOL—St. Paul's Roman Catholic Church, 233 Union St., plans by Bernard W. Roney, 10 S. 18 St., Phila., Pa., school. $500,000.

N. J., **Collingswood**—CHURCH—Bible Presbyterian Church, Haddon Ave. and Cuthbert Blvd., plans by Hettle & Albert, 501 Cooper St., Pennsauken, church $344,000. CD 11/13/45.

▲ N. J., **Fort Dix**—HOUSING—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., plans by Charles J. Kupper, New Market, construct and finance 200-unit family housing development. $5,000,000.

N. J., **Millville**—HOSPITAL—Millville Hospital, Millville, plans by Walter Custer, 241 Giles Rd., Bridge-

(Continued on page 109)

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(Continued from page 106)

ton, hospital. $400,000. Hettie & Albert, Pennsauken, assoc. archts.

N. J., Moorestown—HOME—Lutheran Home of New Jersey, 255 E. Main St., plans by H. Fred Gehrke, Moorestown, home addn. $350,000.

▲ N. J., Plainfield—SHOPPING CENTER—Philip J. Levin, c/o Harold D. Glucksman, archt., 850 Broad St., Newark, Blue Star Shopping Center, 46-acre tract, Route 22 and Bonnie Burn Rd. $7,000,000.

N. J., Wildwood—MOTEL, etc.—Brighton Hotel Corp., 323 E. 22 Ave., North Wildwood, plans by John A. Fletcher, Vineland, motel, swimming pool, restaurant, etc. Rio Brande Blvd., $350,000.

N. Y., Brooklyn—APARTMENT—Belt Parkway Constr. Corp., c/o Kavy & Kavovitt, archts., 44 Court St., Zone 2, 6 story apartment, 2619-49 E. 13 St. $432,000.

N. Y., Flushing—APARTMENT—Syndicate, c/o Benjamin Okun Associates, Inc., 90-50 Parsons Blvd., Jamaica, two 6 story apartments, 34 Ave., east of Union St. $800,000.

▲ N. Y., Hamilton—LIBRARY—Colgate University, Hamilton, plans by R. B. O'Connor & W. H. Kilham, Jr., 101 Park Ave., New York, Zone 17, library, $1,650,000. CO 2/20.

▲ N. Y., New York—OFFICE—American Surety Co., 100 Broadway, Zone 5, office alterations, at site, $1,225,000. Guy B. Panero, 420 Lexington Ave., Zone 17, engrs.

▲ N. Y., New York—OFFICE—Joseph P. Blitz, Inc., 1 E. 57 St., Zone 22, 22 story office, Fourth Ave. and 32 St., $3,000,000.

▲ N. Y., New York—OFFICE—Diesel Constr. Co., Inc., 24 W. 58 St., Zone 19, plans by Emery, Roth & Sons, 575 Madison Ave., New York, Zone 22, 10 story, air-conditioned office, on block bounded by Church and Barclay Sts., West Broadway and Park Place, to be called 100 Church St., $15,000,000. James Ruderman, 32 Union Square, Zone 3, consult. engrs. To go ahead late Fall of 1956.

▲ N. Y., Rockaway Beach—HOSPITAL—Rockaway Beach Hospital, Beach 85 St., plans by Gloster & Gloster, 253 Sunrise Hy., Rockville Center, 5 story hospital on block bounded by Beach 51 St., Beach 52 St., beach Channel Drive and Rockaway Beach Blvd. $2,700,000. To go ahead in June. CD 9/29.

O., Akron—CHAPEL, etc.—St. Pauls Episcopal Church, 1361 W. Market St., chapel and new wing, $450,000.

O., Cincinnati—APARTMENT—George E. Thurner, 2350 Victory Parkway, 4 story brick apartment, Luray Ave. $400,000.

O., Euclid—CHAPEL—Sisters of St. Joseph of St. Mark, Mother M. Romana, Provincial, 21750 Chardon Rd., Cleveland, Zone 17, plans by Horn & Rhinehart, 1240 Huron Rd., Cleveland, Zone 15, 150 capacity chapel; 3 story addn. to provide guest rooms and quarters for 20 sisters. $360,000.

▲ O., Mogadore—HOMES—Housecraft Builders Inc., R. W. Postma, 2049 Braewick Dr., Akron, 78 homes $1,225,000.

▲ O., Parma—HOMES—D & G Building Co., 2166 S. Taylor Rd., Cleveland, Zone 18, 67 homes off Broadview Rd. near Sprague Rd. $1,675,000.

▲ O., Richmond Heights—HOMES—Domenic Nero Constr. Co., 12202 Superior Ave., Cleveland, Zone 6, 219 homes, northwest of Wilson Mills Rd. and Franklin Rd. intersection, Richmond Heights and Highland Heights. $5,475,000.

▲ O., Rocky River—HOMES—N. F. Molnar, Inc., 22547 Lorain Ave., Cleveland, Zone 26, 43 homes on new street west of Wooster Rd., south of Westover Rd. $1,290,000.

O., Toledo—HOSPITAL—Flower Hospital, Percy E. Roper, Bd. Chn., Cherry St., plans by Bellman, Gillett & Richards, 518 Jefferson St., hospital addns., incl. grade-level emergency and admitting area, new lobby, 3 story exten. to maint. bldg. to house patients, 2 story addn. to another wing. $600,000. To go ahead in September.

O., Wickliffe—HOMES—A. Mintz & Sons Building Co., 4098 Lee Rd., Cleveland, Zone 28, plans by Ray Moulthrop, 2163 Lee Rd., Cleveland, Zone 18, 50 homes, Steinway Blvd. in Maple Heights and Truman Ave. in Wickliffe. $827,500.

▲ Okla., Oklahoma City—OFFICE—Dave Shappard, 2307 Classen Bldg., plans by W. H. Schumacher, Tower Theater Bldg., 15 story office, 23 and Classen Sts. $1,000,000.

▲ Ore., Klamath Falls—HOUSING—P. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, Wash., plans by H. R. Perrin, Klamath Falls, construct and finance 220 family housing units for Air Force personnel near jet interceptor base. $2,860,000. Bids this year. CD 1/16.

▲ Pa., Baederwood—STORE, etc.—J. B. Van Sciver Co., Delaware Ave. and Federal St., Camden, N. J., plans by Robert Montgomery Brown, 728 Spruce St., Phila., store and parking area, $1,000,000.

Pa., Lansdale—SHOPPING CENTER—Sylvania Development Corp., 6373 Germantown Ave., Phila., shopping center, $500,000.

Pa., Phila.—OFFICE—Owner, c/o William Stuempfig, 45 W. Maplewood St., plans by David Supowitz, 246 S. 15 St., office, Maplewood Ave. and Green St., $350,000.

Pa., Phila.—SCHOOL—Charles Morris Price School, 1319 Locust St., school, $344,000.

Tenn., Smyrna—HOUSING—Procurement Officer, Sewart Air Force Base, Smyrna, plans by Marr & Holman Architects & Engineers, Inc., Stahlman Bldg., Nashville, construct and finance 87 housing units. CD 1/21.

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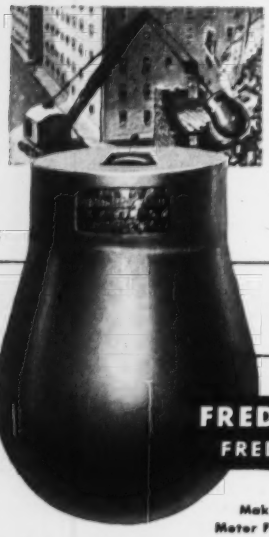

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Manufacturing Co., Newnan, Ga.

Tex., **Beaumont**—HOTEL—Hotel Beaumont, c/o Waldo Wilson, Beaumont, Tex. and Design, Inc., 906 Sidney St., St. Louis, Mo., archts., remodel, expanding masonry hotel. $350,000.

Tex., **Corpus Christi**—CHURCH—St. John's Methodist Church Congregation, Airline and McArdle Rds., masonry church, $600,000.

Tex., **Fort Worth**—CHURCH—Evans Ave. Baptist Church, 1801 Evans Ave., plans by Harry L. Bosworth, 516 N. P. Anderson Bldg., church. $450,000. CD 1/24.

▲ Tex., **Garland**—DWELLINGS—Ricker-Frank Assocs., 911 St. Joseph St., 32 brick veneer dwellings, $375,000; 22 brick veneer dwellings, $355,500; 18 brick veneer dwellings, $346,150; 26 brick veneer dwellings, $366,110 in "Empire Estates".

▲ Tex., **Grand Prairie**—DWELLINGS—Hub Hill & Assocs., 2121 N. Field St., Dallas, 28 dwellings, $359,000; 24 dwellings, $348,815; 21 dwellings, $351,620; all in 1400-acre tract.

Tex., **Houston**—HOMES—Garden Oaks Building & Realty Co., c/o P. S. Luttrell, 3205 N. Shepherd St., 24 homes, Verdome Lane, $356,500.

▲ Tex., **Houston**—DWELLINGS—J. E. Lyon Development Co., Prudential Bldg., 22 dwellings, $358,175; 18 dwellings, $350,000; 25 dwellings, $366,000; 30 dwellings, $386,410; 28 dwellings, $378,605, at Westheimer Rd.

▲ Tex., **Houston**—SHOPPING CENTER—Port City Village Corp., c/o Irving B. Klein & Assocs., archts., 1317 Austin St., shopping center to incl. five 1 story, partial bsmnt., masonry bldgs. $1,250,000. Walter P. Moore, 2 Pinedale St., and J. Waune Holland, 6515 Narcissus St., consult. engrs.

▲ Tex., **Houston**—DWELLINGS—United Lumber & Building Co., Jack Perry, 1110 Prospect St., 27 dwellings, $345,500; 31 dwellings, $392,100; 28 dwellings, $358,000; 30 dwellings, $379,410 in Home Owned Estates.

▲ Tex., **Houston**—DWELLINGS—United Lumber & Bldg. Co., Jack Perry, 1110 Prospect St., 25 dwellings, $347,500; 29 dwellings, $385,175; 33 dwellings, $375,000; 26 dwellings, $359,915, in Lake Forest Addition.

▲ Tex., **Houston**—DWELLINGS—United Lumber & Building Co., Jack Perry, 1110 Prospect St., 32 dwellings, $384,000; 29 dwellings, $348,500; 34 dwellings, $409,000; 39 dwellings, $360,000 in Scenic Woods.

Tex., **Irving**—HOSPITAL—Dr. E. O. Rushing & Assocs., 5939 Luther Lane, Dallas, 73-bed hospital, $400,000.

Tex., **Lubbock**—DWELLINGS—Kulp & Gibson, 50 St. at Elgin Ave., plans by Charles E. Armstrong, 6351 Camp Bowie Blvd., Ft. Worth, 25 dwellings, in 500-dwelling project. $381,135.

▲ Tex., **Mesquite**—DWELLINGS—Riggs & Major, Inc., 402 Calloway St., 23 dwellings, $418,500; 7 dwellings, $350,000; 18 dwellings, $370,000; 11 dwellings, $365,000; 15 dwellings, $376,100; 20 dwellings, $381,000.

▲ Tex., **Pasadena**—DWELLINGS—Parkwood Subdivision, C. O. Beeler, c/o Beeler Lumber Co., 4715 Calhoun St., Houston, 32 dwellings, $347,700; 40 dwellings, $379,000; 36 dwellings, $368,775, in Parkwood.

Vt., **Burlington**—DORMITORY—Trinity College, Colchester Ave., plans by Julian W. Goodrich, 275 College St., dormitory, $500,000.

Vt., **Poultney**—DORMITORY—Green Mountain Junior College, Howard C. Ackley, pres., Poultney, plans by Milton L. Crandell, 10 Broad St., Glens Falls, N. Y., 3 story, 110x122 ft. brick dormitory $600,000.

Wis., **Appleton**—SCHOOL—Fox Valley Lutheran High School Assn., 801 Main St., plans by R. N. LeVee & Assocs., 1000 W. College St., 1 story, part bsmnt., 194x244 ft. parochial high school, $344,000. CD 8/12/49.

Wis., **Milwaukee**—CHURCH, etc.—St. Gregory the Great Catholic Congregation, c/o Brust & Brust, archts., 135 W. Wells St., Zone 3, church, parish hall and rectory, $400,000.

▲ Wis., **Milwaukee**—HOSPITAL—St. Mary's Hospital, 2320 N. Lake Dr., plans by Maguolo & Quick, 4908 Delmar Blvd., St. Louis, Mo., hospital remodeling and addn. $3,500,000.

▲ Alta., **Calgary**—DEPARTMENT STORE—Simpson-Sears Ltd., 176 Yonge St., Toronto, Ont., plans by J. Stevenson & Assocs., 340 7 Ave. W., Calgary, 2 story 150,000 sq. ft., rein.-con. Department Store, $2,500,000.

Ont., **Delaware**—SEMINARY—Roman Catholic Diocese of London, Bishop John C. Cody, 520 Richmond St., plans by Watt & Tillman, 343 Richmond St., London, Sacred Heart Junior Seminary. $350,000.

▲ Ont., **Toronto**—OFFICE—Canadian Bank of Commerce, 25 King St. W., office bldg. addn. $10,000,000.

▲ Ont., **Toronto**—OFFICE—Owner, c/o Marani & Morris, archts., 1250 Bay St., 12 story office, University Ave., Edward and Center Sts., $4,500,000. Work to start in late summer.

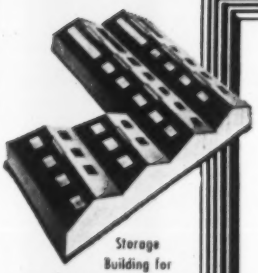
▲ Ont., **Toronto**—OFFICE—Swiss Syndicate, c/o Chartered Trust Ltd., 33 King St. W., 20 story office bldg., University Ave. and King St. $8,000,000.

Ont., **Toronto**—APARTMENT—Temple Building Investments, 84 Richmond St. W., plans by Harry B. Kohl, 1407 Yonge St., 80-unit, 8 story, bsmnt. apartment, Jameson Ave. $640,000.

▲ Que., **Montreal**—OFFICE—Leo Kolber, 132 St. James St. W., 15 story, 10,000 sq. ft., structural steel frame office, Guy and Dorchester Sts. $5,000,000. Work may start in September.

(Continued on page 112)

Another Industrial Leader...



Storage Building for J. I. Case Co., Racine, Wisconsin

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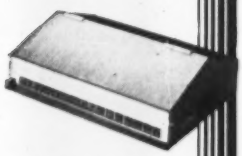
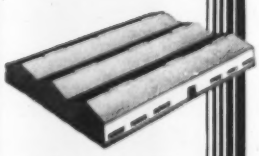


Manufacturing Building for J. I. Case Co., Anniston, Alabama



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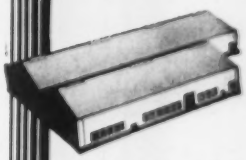
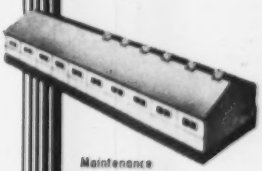
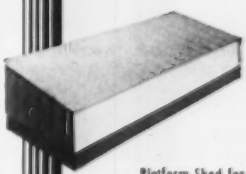
Tractor Development and Testing Building for J. I. Case Co., Racine, Wisconsin



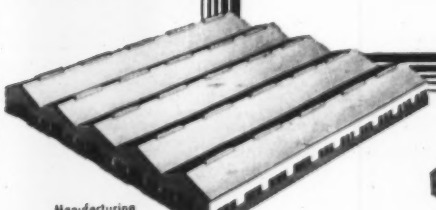
Tool & Pattern Shop for J. I. Case Co., Anniston, Alabama



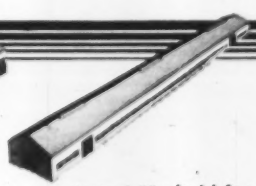
Maintenance Building for J. I. Case Co., Rockford, Illinois



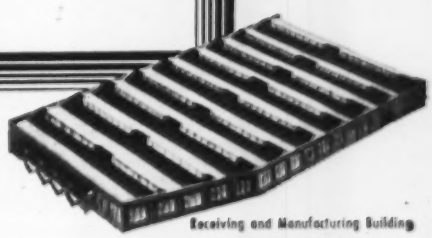
Platform Shed for J. I. Case Co., Burlington, Iowa



Manufacturing Building for J. I. Case Co., Stockton, California



Storage Building for J. I. Case Co., Racine, Wisconsin



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(Continued from page 110)

INDUSTRIAL BUILDINGS

Ala., Birmingham—WAREHOUSE—Allied Chemical & Dye Corp., Barrett Div., 1327 Erie Ave., 38,000 sq. ft. warehouse, 1327 Erie Ave. $200,000.

Ala., Duncanville — WAREHOUSE — Gulf Refining Co., 1312 8 Ave. N., Birmingham, 1,140x140 ft., warehouse, Pipeline Terminal $225,000.

Calif., Fullerton—PLANT—Standard Products Co., 2130 W. 110 St., Cleveland 20, 50,000 sq. ft. automotive window channels mfg. plant, $500,000.

Calif., Los Angeles—PLANT—Chun Wong, Inc., 942 Yale St., plans by Eugen Kung Choy, 1344 Wilshire Blvd., 30,000 sq. ft. food processing plant, $200,000.

Calif., Los Angeles—PROCESSING, STORAGE—Henry Kerwin, 648 Mateo St., 145x186 ft., concrete food processing and storage bldg. $100,000.

Calif., San Francisco—PARKING GARAGE—Owner c/o J. P. Conrich, archt., 593 Market St., parking garage, Mission and First Sts. $600,000.

Calif., San Francisco—TERMINAL—Tide Water Associated Oil Co., 79 New Montgomery St., bulk product terminal, $500,000. V. A. Morley, 515 Market St., consult. engr. CD 2/21.

▲ Calif., South San Francisco—BAKERY—Colonial Bakeries, 352 Grand Ave., bakery, Spruce Ave. $1,000,000.

▲ Calif., Stockton—PLANT—Johns-Manville Corp., 22 E. 40 St., New York 16, N. Y., asbestos-cement pipe products plant, near here. $1,500,000.

▲ Calif., Stockton—PLANT—Pacific Clay Products Co., California St., expanding present plant. $1,000,000.

Ill., Chicago—WAREHOUSE—Lavine & Sons, c/o Theodore Rogeoy, archt., 929 Fox Bldg., Detroit, Mich., 24,000 sq. ft. warehouse, Bryden and West Chicago Sts. $150,000.

Ill., Chicago—FACTORY—Rock-Ola Mfg. Corp., 800 N. Kedzie St., plans by Friedman, Alschuler & Sincere, 223 Jackson St., Zone 6, 2 story, 96,000 sq. ft. factory addn. $900,000. CD 9/29/49.

▲ Ill., Chicago—STEEL WORKS EXPANSION—Wisconsin Steel Works, Div. of International Harvester Co., Torrence and 106 Sts., steel works expansion addn., incl. furnace work, 7 new wilpute ovens, soaking pits, chemical recovery equip. $10,000,000.

Ind., Frankfort—FACTORY—California Packing Co., Frankfort, 12,000 sq. ft. steel, brick factory addn. $150,000.

Ind., Jasonville—PLANT—Umbaugh Agricultural Chemical Co., 3593 Central Ave., Memphis, Tenn., fertilizer plant, $300,000.

Ind., Warsaw—FACTORY—Arnolt Corp., S. H. Arnolt, pres., Warsaw, 30,000 sq. ft. factory addn., Argonne Rd. $350,000.

Iowa, Clear Lake—GRAIN ELEVATOR—Farmers Cooperative Co., Clear Lake, grain elevator, $140,000.

Iowa, Sioux City—WAREHOUSE—Kitty Clover Inv. Co., 2200 S. 24 St., Omaha, Neb., branch warehouse. $1,000,000.

Ky., Wilder—SUB-STATION—Union Light, Heat & Power Co., Scott St., Covington, sub-station addns., imprvs. $906,000. Bids in Summer.

▲ La., Baton Rouge—PLANT—Dow Chemical Co., Midland, Mich., chemical plant to produce chlorine caustic soda and organic chemicals. $20,000,000.

Mich., Monroe—FACTORY—Consolidated Paper Co., A. H. Lockwood, pres., Monroe, 50,000 sq. ft. factory addn., $500,000; water waste treatment facilities at south side plant, $150,000.

Minn., St. Paul—FACTORY—National Heater Co., T. J. Costello, pres., 2180 Cleora Ave., plans by Haarstick, Lundgren & Assoc., N. 212 First National Bank Bldg. factory in tract west of Eustis St. and between Valentine Ave. and Doswell St., $250,000.

▲ Minn., Savage—PLANT—Green Giant Co., G. C. Scott, vice pres., LeSueur, can mfg. plant near Minnesota River, north of Hy. 5 and adjacent to Port Cargill, $1,000,000.

Mo., Hazelwood (St. Louis 20 P. O.)—WAREHOUSE—Allis-Chalmers Mfg. Co., 1126 S. 70 St., Milwaukee 1, Wis., plans by Wedemeyer & Hecker, 111 N. 4 St., St. Louis, Zone 2, 1 story, 65,000 sq. ft., brick, mason steel concrete warehouse with rail and truck loading facilities, U. S. No. 66 and Hazelwood Rd. $650,000.

Mo., St. Joseph—PLANT—Seitz Packing Co., Lake and Packers Ave., plans by John Troy, 2401 N. St., Omaha, Neb., meat packing plant. $350,000.

Neb., Blair—PLANT—Blair Mfg. Co., (successor to Kelley Ryan Co.), Blair, implement mfg. plant. $125,000.

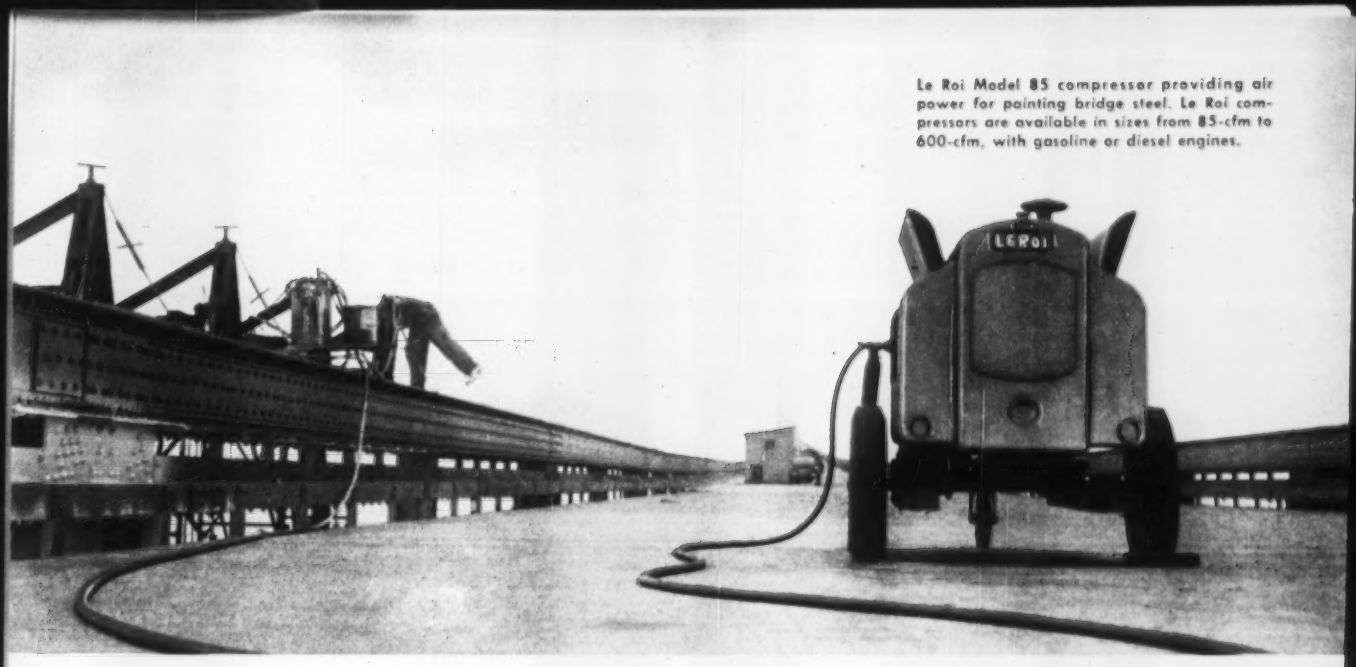
N. J., Toms River—SALES and SERVICE—Downs Agency Inc., 30 Myers St., plans by Ferdinand F. J. Klebold, 475 Bronx River Rd., Yonkers, N. Y., auto sales and service bldg. $150,000.

N. Y., Beekman-Pawling—LABORATORY—Nuclear Development Assoc., Inc., 80 Grand St., White Plains, general purpose laboratory and service bldg. on 1,100 acre tract, $400,000; and power reactor on 1,100 acre tract, both at Southern Dutchess Experiment Laboratory.

N. Y., Greenburgh—SERVICE GARAGE, etc.—Curry Chevrolet, 728 Central Ave., plans by Henry A. Cook, 66 Wilson St., Hartsdale, service garage and showroom at site, $250,000. To go ahead in Spring 1956.

▲ N. C., Raleigh—PLANT—International Paper Co., R. C. Doane, pres., 220 E. 42 St., New York, N. Y., paper milk carton plant, 11.057 acres on City Farm Property, Wilmington St. Exten. $1,000,000.

(Continued on page 115)



Le Roi Model 85 compressor providing air power for painting bridge steel. Le Roi compressors are available in sizes from 85-cfm to 600-cfm, with gasoline or diesel engines.

4 Million Cubic Feet of Air Power per Day Speeds New Bridge Construction

Le Roi Airmaster Compressors provide power for sand-blasting and spraying 46,000 gallons of paint on new 21,243-foot bridge.

Also use Le Roi airpower on construction work at water level.

Working air power, in the yard, on the deck, and at water level, totals about 4 million cfm a day.

Nearly 200 feet above San Francisco Bay, a fleet of Le Roi compressors provides 95% of the air power for spraying 46,000 gallons of paint on new bridge steel. The project is a $62 million bridge to span 4.4 miles of windswept water. It will link the cities of Richmond and San Rafael, California.

Compressors exposed to elements. High up on the bridge structure, Le Roi compressors are exposed to cold, moist, salt-laden winds. Only equipment designed for the toughest construction work can give top performance under these conditions — another reason why contractor D. E. Burgess uses Le Roi compressors to spray 46,000 gallons of paint on four miles of bridge steel.

Sandblasting is rugged work. Back in the yards, Le Roi compressors are also providing air power for sand blasting. It's tough, continuous work . . . fills the air with abrasive dust. Yet Le Roi compressors keep a steady flow of air power at work. They're easy to start, too. That's why more than a dozen compressors are used on this enormous and important project.

Prime contractors on this bridge project are Judson Pacific, Murphy, Kiewit. Upon completion, it will be the world's second largest bridge surpassed only by the famed San Francisco Bay bridge.

Le Roi's are designed for dependability. Le Roi compressors were chosen for this big project because they combine long service, good fuel economy, low cost maintenance, and deliver more cool, clean air for less money. Valves are interchangeable and accessible for quick, easy maintenance. You also get more generous cfm with lower rpm. Lower rpm means lower speed — the result, less heat, less wear, and less fuel.

Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin also manufactures Tractair and stationary air compressors, air tools, and heavy-duty engines. Write today for information about any of these products, or see your Le Roi distributor.

This Le Roi 600-cfm compressor is providing air power for tough job of sand blasting new steel. It's one of a fleet of Le Roi compressors at work on 4½ mile bridge project.

A road earning money? Absolutely! Every road earns money in the form of gas taxes and license fees paid by drivers using it. The more vehicle miles of traffic a road handles the more money it earns.

The road pictured is Shirley Memorial Highway in Va. It carries a daily average of 30,000 vehicles, many of them commercial. Here's how the earnings of this concrete road are computed:

Vehicles traveling this road per day	30,000
Times average vehicle tax per mile in Va.	$.00745
Equals earnings per day per mile	$223.50
Times number of days a year	365
Equals annual earnings per mile	$81,578
Minus the annual cost to build and maintain such a road during its lifetime	$10,000
Equals annual profit earned per mile	$71,578

Similar analyses elsewhere show that concrete roads earn the most "profit." That's because they attract the most traffic and have the longest life.

For example, concrete carries the load on 92% of the pavement of the 25 most heavily traveled rural road sections in America. And official studies reveal that concrete has at least twice the life expectancy of the next most commonly built pavement.

Concrete roads usually earn *more* than they cost to build and maintain. The "profit" pays for additional miles of new highways. In contrast, other commonly built pavements have such a relatively short life and require such frequent and expensive maintenance that they earn *less* than they cost to build and maintain. Thus they drain an increasing amount from available funds for maintenance, leaving a decreasing amount for building critically needed new mileage.

Highway users expect engineers and public officials to invest their money in roads paying the best dividends. That means paving all main roads with concrete, the self-supporting, profit-making pavement.

For more information about designing and constructing low-annual-cost, high-earning-capacity concrete highways, write today for free literature, which is distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION Dept. 3c-17, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

(Continued from page 112)

▲ O., Cincinnati—PLANT, etc.—Kroger Co., 35 E. 7th St., plans by Robert Kennedy, 2055 Francis Lane, plant for mfg. instant coffee, 1212 State Ave. $350,000. Bids in Spring; plans by Pansiera & Dohme, 3167 Woodford Ave., 1 story 60,000 sq. ft. brick, structural steel warehouse and garage, Glendale-Milford Rd., $800,000. Bids in summer. Hixson Tarter & Assoc., 2320 Victory Parkway, consult. engrs. for both jobs.

▲ O., Cincinnati—BOTTLING PLANT—Pepsi Cola Bottling Co., 810 W. 5 St., brick, structural steel bottling plant, office and warehouse. $1,000,000. Stanley Gorelink, c/o owner, engr.

O., Kettering—ENGINEERING—Delco Products Div., General Motors Corp., Stevens and E. 1st. St., Dayton, Zone 1, 2 story, 85,000 sq. ft. engineering bldg.

O., Marietta—FACTORY—Airolite Co., Marietta, 27,000 sq. ft. factory addn. on east side of present bldg. $150,000.

O., Millersport—FACTORY—Midland Screw Corp., Millersport, 150x240 ft. factory, State Rte. 204.

▲ O., Solon—WAREHOUSE—The Kroger Co., 1240 State St., Cincinnati, 300,000 sq. ft. warehouse, 40-acre site Aurora Rd. $3,000,000.

O., Toledo—HEADQUARTERS—Goodwill Industries, Cherry St., headquarters bldg. $350,000.

Pa., Cornwells Heights—PLANT—Tryon Agency, Att. Edward Heffner, Andalusia, research and assembly plant, $150,000.

▲ Pa., King of Prussia—RESEARCH and DEVELOPMENT CENTER—General Electric Co., 202 State St., Schenectady, N. Y., research and development center. $5,000,000. J. C. Nowell, c/o owner, mfg. engr. and constr. section.

▲ Tenn., Dyersburg—PLANT—Heckethorn Mfg. & Supply Co., 101 W. Alamo St., Littleton, Colo., 55,000 sq. ft. shock absorber plant. $1,000,000.

Tex., Beaumont—PLANT—E. I. duPont deNemours & Co., Inc., Old Port Arthur Rd., plant addn. Over $500,000.

Tex., Dallas—PLANT—Chance Vought Aircraft, Inc., 9314 W. Jefferson St., plant addns., paint mix rooms, etc. $100,000. R. C. Stokes, 801 Burt Bldg., consult. engr.

Tex. Duncanville—PLANT—Owner, c/o Dr. Allen M. Fain, Duncanville, clothing mfg. plant. $250,000.

Tex., El Paso—WAREHOUSE—Luther Transfer & Storage Inc., Box 818, Lubbock, plans by John Ring, Banner Bldg., 1 story, rein.-con., structural steel warehouse. $100,000.

Tex., El Paso—WAREHOUSE—Midland Speciality Co., 426 W. San Antonio St., Midland, plans by A. V. Benner, El Paso Natl. Bank Bldg., 2 story, brick, 45,000 sq. ft. warehouse. $200,000.

Tex., Midland—WAREHOUSE—Midland Specialty Co., Midland, plans by A. V. Benner, El Paso Natl. Bank Bldg., El Paso, 2 story, 45,000 sq. ft. masonry, brick veneer warehouse, $200,000.

Tex., Port Arthur—BATH-LOCKER—Gulf Oil Corp., Port Arthur, plans by Stone & Pitts, archts.-consult. engrs., 1872 Calder St., Beaumont, face brick, concrete, steel frame Bath and Locker Bldg. No. 5 for package and grease plant, $100,000.

Wis., Glendale—PLANT—Square D Co., 4041 N. Richards St., plans by Grassold-Johnson & Assocs., 734 N. Jefferson St., Milwaukee, Zone 2, 180,000 sq. ft. mfg. plant. $150,000.

Wis., Oshkosh—WAREHOUSE—Oshkosh Storage Co., 701 S. Main St., plans by Auler, Dreger, Wiley & Wertsch, archts.-engrs., 46 Washington Blvd., 2 story, 82x138 ft., steel, concrete block warehouse. $150,000.

Wis., Racine—FACTORY—Heinrich Tools, Inc., 1536 Clark St., plans by Hans M. Geyer, 1408 Washington Ave., 1 story, 110x140 ft. factory. $100,000.

Wis., Ripon—FACTORY—Speed Queen Corp., Ripon, 1 story, 140x220 ft., concrete, steel, brick factory addn. $300,000. Sanstedt & Knoop, 22 Otter St., Oshkosh, consult. engrs.

Alta., Edmonton—PLANT—Canada Packers Ltd., Fort Rd. and 70 St., plans by Rule, Wynn & Rule, 11422 Jasper Ave., plant addn. Over $100,000.

Ont., London—PLANT—General Motors Diesel Corp., F. V. Rippingille, mgr., Oxford St. E., plant addn. $300,000.

Ont., Port Robinson—PLANT—North American Cyanamid Ltd., Port Robinson, Xanthate plant, Over $100,000.

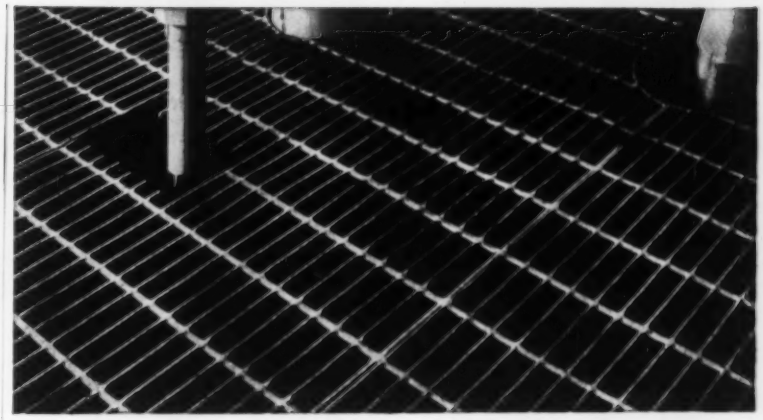
▲ Ont., Toronto—PLANT, etc.—Minneapolis-Honeywell Regulator Co. Ltd., Vanderhoof Ave., plans by Gordon S. Adamson & Assocs., 52 St. Clair Ave. E. 1 story plant and office, 35-acre site $4,000,000. Wallace, Carruthers & Assocs., 35 Isabella St., consult. engrs.

Ont., Toronto—PLANT, etc.—J. H. Ryder Machinery Co. Ltd., 1130 Bay St., plans by Arthur Heeney, Jr., 12 Langmuir Cres., 2 story plant and office, Hy. 401 and Dufferin St. $250,000. CD 2/7.

Ont., Westminster—FACTORY, etc.—Metallic Fabrication Div., Pittsburgh Glass Co., 70 York St., London, plant by L. G. Bridgeman & Robert Mac Tavish, Royal Bank Bldg., London, 1 story, steel, brick factory and 1 story, steel, brick offices. $200,000. B. A. Hastings, 149 Queens Ave., London, consult. engr.

UNCLASSIFIED

▲ Ala., Mobile—BERTHS—Alabama Bureau Docks & Opt., Docks & Terminal Bldg., 3 berths to docks. $3,000,000. Trotter & Ernst, Eng. Co., 1814 Old Shell Rd., engrs. Bids about 6 months. CD 11/10/52.



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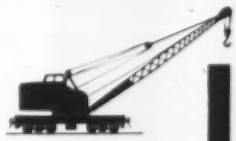

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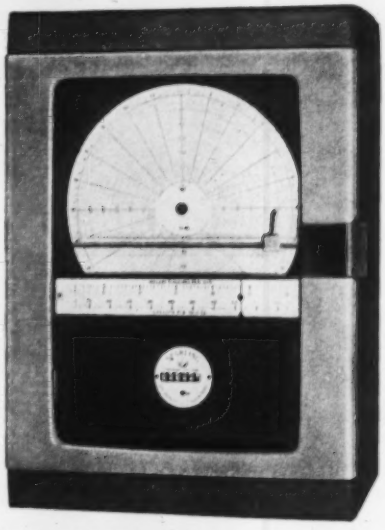

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Calif., Los Angeles—SWIMMING POOL—Los Angeles Dpt. Recreation & Parks, City Hall, plans by Jones & Emmons, 12248 Santa Monica Blvd., swimming pool, Green Meadows Park, $100,000. CD 1/15/45.

Calif., Los Angeles — MECHANICAL STAIRWAYS — Los Angeles Memorial Coliseum, 3911 S. Figueroa St., 2 mechanical stairways, $200,000. Bennett & Bennett, 1165 E. Colorado St., Pasadena, consult. engrs.

Calif., Palm Springs—GOLF COURSE, etc.—City, City Hall, defeated bonds Feb. 4, golf course, $750,000; park development, $120,000. CD 1/23.

Calif., Palm Springs—LIGHTS—City, City Hall, voted $155,000 bonds, lights and palm trees on Palm Canyon Dr. and lights on Indian Ave.

Conn., West Hartford—SWIMMING POOL—The Cornerstone Club, c/o R. L. Loomis, town mgr., Town Hall, plans by Willard Wilkins, 945 Asylum Ave., Hartford, swimming pool and locker rooms. $150,000. CD 12/19.

Conn., Westport—PARK—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Westcott & Mapes, Inc., 109 Church St., New Haven, filling, grading back of groin and training walls, Sherwood Island State Park, $300,000. P. J. Carroll, c/o owner, engr. Clarence Blair Assocs., Inc., 100 Crown St., New Haven, consult. engr. CD 9/21/44.

Illinois — RURAL DISTRIBUTION LINES — Shelby Electric Co-operative, Shelbyville, 84 mi. rural distr. lines, 3 mi. 69 kv transmission line and sys. impvts. Shelby Co. $645,000.

Indiana—RURAL DISTRIBUTION LINES—Jasper County Rural Electric Membership Corp., Rensselaer, 18 mi. rural distr. lines, sys. impvts., Jasper Co. $450,000.

Kentucky—RURAL DISTRIBUTION LINES—Union Light, Heat & Power Co., Scott St., Covington, rural distr. lines, from Kentucky-Ohio border to Wilder, Ky. substation. $729,000. Bids in Summer.

▲ **Louisiana**—GAS GATHERING LINES—Offshore Gathering Corp., 3625 Westheimer St., Houston, Tex., 34.4 mi. 20- to 30-in. gas gathering lines in Gulf of Mexico area off shores of Louisiana, Lake Charles. $60,000,000.

Minnesota — RURAL DISTRIBUTION LINES — Faribault County Co-operative Electric Assoc., Frost, 25 mi. rural distr. lines, sys. impvts., Faribault Co. $138,000. CD 1/3/50.

Nebraska—RURAL DISTRIBUTION LINES—Cedar-Knox County Rural Public Power Dist., Hartington, 17 mi. rural distr. lines, sys. impvts., Cedar and Knox Counties. $260,000. Henningson, Durham & Richardson, 2762 Harney St., Omaha, consult. engrs. CD 6/7/51.

† **N. Y., Charlotte Center**—GAP FILLER—U. S. Eng., 111 E. 16 St., New York, Zone 3, low gap filler at A. C. & W. site. $100,000. Cowell-Robinson, 25 W. 43 St., New York, Zone 36, engrs.

▲ **N. Y., Syracuse**—ZOO—City, Parks Dpt., City Hall, impvts., expansion of city zoo, incl. new bldgs., impvt. existing bldgs. and facilities, addnl. utilities, parking area, children's zoo, $1,500,000.

O., Cincinnati—UTILITIES—John Scanlon, Schmidt Bldg., streets, sewers, water lines, approx. 3,300 ft. streets off Ebenezer Rd. $100,000. Nunlist & Frolicher, Traction Bldg., consult. engrs.

O., Dayton—COMMUNITY CENTER—City, Herbert Starick, mgr., plans by Arnold F. Igleburger, Hulman Bldg., Lohrey Community Center in Belmont Park, $187,451, John F. Hale, city engr. CD 6/30/54.

O., Lakewood—SWIMMING POOL—Lake Shore Hotel, Inc., 12506 Edgewater Dr., Cleveland, Zone 7, swimming pool and cabana club. $125,000-$175,000. Koven Steel Pools, 254 Ogden St., Jersey City 7, N. J., consult. engrs.

O., Lebanon—SWIMMING POOL—Lebanon Swimming Pool, Inc., E. Orchard St., swimming pool. $125,000. Bids Summer 1956.

Pa., Allentown—BOILER, etc.—General State Auth., 18 and Herr Sts., Harrisburg, boiler and boiler plant corrections, $240,000; complete change-over from direct to alternating current in electrical system, $360,000, at Allentown State Hospital, A. F. Jones, c/o owner, ch. engr.

Pa., Harrisburg—POWER HOUSE—General State Auth., 18 and Herr Sts., Harrisburg, power house, revamping electrical sys., and new 10 in. water main, at State Farm Show Building, $400,000. A. F. Jones, c/o owner, ch. engr.

Pa., Phila.—AQUARIUM—Dpt. Procurement, City Hall Annex, plans by Erling H. Pederson, 1700 Walnut St., aquarium, $750,000. CD 2/3/47.

Pa., Pottstown—SWIMMING POOL—Brookside Country Club, Pottstown, swimming pool, clubhouse addn. $100,000.

▲ **Texas**—GAS LINES—Trunkline Gas Co., 5650 Kirby St., Houston, 25 mi. pipe line and 8 compressor stations for total 56,000 h.p., Houston-Beaumont areas. $7,700,000.

Tex., Amarillo—BASEBALL PARK, etc.—City, City Hall, voted bonds Jan. 7, baseball park, grandstands, appurtenances. $350,000. Howard Ensign, 1312 W. 15 St., archt.

Tex., Irving—PARK, etc.—City, City Hall, municipal park, $100,000; rein.-con. swimming pool, $100,000.

Tex., San Antonio—TOWER, and ANTENNA—Southland Industries, Inc., c/o WOAI-TV Station, 1031 Navarro St., 1,389 ft. TV tower and antenna, 45-acre tract, U. S. Hy. 90E. and St. Hedwig Rd. $200,000.

Vermont—RURAL DISTRIBUTION LINES—Washington Electric Co-operative, East Montpelier, 14 mi. rural distr. line, 3 new sub-stations and sys. impvts., Washington Co. $105,000. CD 4/21/50.

Wyo., Fort Washakie—BATH HOUSE—Owner, c/o Tresler & McCall, archts., Box 900, Cody, bath house, $100,000.

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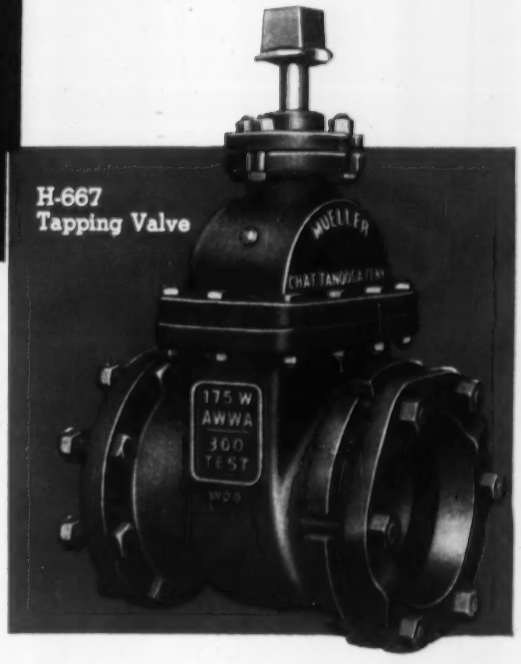

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 19 Connecticut
STREETS AND ROADS
March 19 Connecticut March 20 Massachusetts

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Wes-Julian Constr. Corp., 850 Providence Hy., Dedham, Mass. LB $4,111,998. Contr. B. hy. and bridge Southeast Expressway, Dorchester. Bids Mar. 6. CD 2/15.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,
Mariani Constr. Co., 222 Forbes Ave., New Haven, LB $4,889,703. Proj. 316A-01, multiple span composite girder and beam bridge over West River and Kimberly Ave., multiple span composite rolled beam viaduct for Ramp A, grade separation structure at Boulevard relocation and grading, drainage, paving with b. conc. on Kimberly Ave. and Boulevard, West Haven and New Haven. Bids Mar. 5. CD 2/15.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,
C. W. Blakeslee & Son, Inc., 58 Waverly St., New Haven, Conn., LB $4,271,357. Proj. 317-04, c. conc. between Sta. 110 plus 0 and Water St., Water St. and West Side of Belle Dock and East Bank of Quinnipiac River to Stile St., New Haven. Bids Mar. 5. CD 2/15.

▲ **CONNECTICUT**—State Hy. Comn., State Hy. Office Bldg., Hartford,
L. G. DeFelice & Son, Inc., Nettleton Ave., North Haven, Conn., LB $9,123,457. Proj. 312-01, c. conc. 13,806 lin. ft., incl. grade separation structures at Pembroke St., Seaview, Newfield, Central Union and Hollister Aves. in Bridgeport and Surf Ave., Stagg and Mead Sts., Honeysport Rd. and South Ave. in Stratford, incl. substructures of Yellow Mill Pond Bridge, Stratford Ave. Overpass and Beardsley St. Overpass, Bridgeport and Stratford. CD 2/23, under LB.

▲ **CONNECTICUT**—State Hy. Dpt., State Office Bldg., Hartford,
Frouge Constr. Co., 141 North Ave., Bridgeport, Conn., CA, $3,937,164, Proj. 311-03, c. conc. 2.509 lin. ft. Conn. Turnpike, incl. grade separation structures, and ramps, Bridgeport, Fairfield Co. Bids Feb. 6, awarded Mar. 2. CD 2/8, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 20 Maryland March 20, 29 New Jersey
March 21 Delaware

▲ **Pa., Phila.**—HIGH SCHOOL—BA 4/27 Bd. Educ., 21st and Winter Sts., girls' high school, Broad St. and Olney Ave. $5,000,000. Borie & Smith, 117 S. 17 St., archts. Frederick H. Dechant, 123 S. Broad St., engr. CD 4/25.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State, Dpt. P. Wks., John W. Johnson, supt., The Gov. Alfred E. Smith State Office Bldg., Albany,
Felix Contracting Corp., 602 S. Columbus Ave., Mt. Vernon, N. Y. LB $7,066,395, est. $7,600,000 (6 bidders) constr. 2.49 mi. portion of State Thruway's New England Sect. and 3.05 mi. of access roads from Chatsworth Ave. in Larchmont northeastward to Mamaroneck Ave. in Mamaroneck, Westchester Co. Bids 3/8.

▲ **Oakhill Contg. Co., Inc.**, 41-10 102 St., Corona, N. Y. LB $4,328,954, est. $4,337,300 (5 bidders) storm water relief sewer, appurtenances 19 Ave., 19 Ave., 80 St., Grand Central Pkwy., 80 St.; storm water sewer, appurtenances in 77 St.; combined sewer, appurtenances 24 Ave., 81 St., 77 St., 30 Ave., 70 St., 80 St., 21 Ave.; existing combined sewer, appurtenances 80 St., Astoria Blvd., 24 Ave.; sanitary sewer, appurtenances in 80 St.; reconstr. sanitary sewer, appurtenances 80 St., NEW YORK, President Queens Boro, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. Bids Mar. 5. CD 2/10.

▲† **B. Perini & Sons, Inc.**, 73 Montwait Ave., Framingham, Mass.; **Morrison-Knudsen Co., Inc.**, 319 Broadway Ave., Boise, Idaho; **Peter Kiewit Sons Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb.; **Utah Constr. Co.**, 100 Bush St., San Francisco, Calif., and **Walsh Constr. Co.**, 122 E. 42 St., New York, N. Y. LB $26,751,838, est. $21,731,022 (combined bid) Grass River Lock, St. Lawrence Seaway, St. Lawrence River, for St. Lawrence Seaway Development Corp., NEW YORK. U. S. Eng., Niagara and Bridge Sts., Buffalo 7, N. Y. Bids Mar. 6. CD 1/18.

BUILDINGS—LB & CA

▲ **Lasker Goldman Corp.**, 50 East 42 St., New York 17, N. Y. CA $3,431,000. general constr. county OFFICE, RIVERHEAD, N. Y. Bd. Superv. Suffolk Co., Riverhead, N. Y. Grand total $4,851,000. CD 3/6, under LB;
Norman Heating Co., Inc., 26-16 Skillman Ave., Long Island City, N. Y. CA $774,000. heating work (Riverhead, N. Y.);
Geeco Electric Constr. Corp., 239 Hempstead Turnpike, Franklin Square, N. Y. CA $646,000. electrical work (Riverhead, N. Y.).

▲ **Paul Tishman General Contractor, Inc.** 21 E. 70 St., New York, N. Y., LB $3,478,889, est. $3,393,679. North Allen HOUSING, PHILA., PA. Phila. Housing Auth., 42 S. 15 St., Phila., Pa. Bids Mar. 1. CD 1/25.

▲ **Koppers Co., Inc.**, (Engineering and Construction Div.,) Koppers Bldg., Pittsburgh 19, Pa. CA Total est. $200,000,000. design and contract OPEN HEARTH SHOP with seven 350-ton open hearth furnaces and auxiliary equip.; soaking pit shop with 16 pits of regenerative type adaptable to blast furnace gas firing, slabbing mill shop with 45x90 in. universal mill and all transportation, utility and related facilities for these installations, SPARROWS POINT, MD. Bethlehem Steel Corp., Bethlehem, Pa. CD 1/31.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 21 Louisiana
STREETS AND ROADS
March 21 Louisiana

HEAVY CONSTRUCTION—LB & CA

▲† **P. Wks. Officer, Dpt. Navy**, Naval Base, Charleston, S. C., rejected bids Feb. 28, waterfront facilities and utilities, Naval Minecraft Base, NOY 94250, CHARLESTON, S. C. LB $4,520,000. CD 3/6, under LB.

▲† **McDonough Constr. Co. of Georgia**, 7 Baltimore Pl. N. W., Atlanta, Ga., LB $3,315,143. Base Bid $3,807,433. Base Bid and Alternate, 280-unit family HOUSING, (Eglin Auxiliary No. 9) ENG-01-076-56-35, HURLBURT AIR FORCE BASE, FLA. U. S. Eng., 2301 Grant St., Mobile 7, Ala. Bids Feb. 28. CD 2/9.

▲† **Dravo Corp.**, Neville Island, Pittsburgh, Pa. CA $18,461,984 (5 bidders) lock constr., Markland Locks & Dams, Warsaw, Gallatin Co., CIVENG-15-029-56-59, KENTUCKY. U. S. Eng., P. O. Box 59, Louisville 1, Ky. Bids Feb. 29, awarded Mar. 5. CD 3/2, under LB.

BUILDINGS—LB & CA

▲ **Babcock & Wilcox Co.**, 161 E. 42 St., New York, N. Y. CA $24,489,355, three boilers, 12 stories high for conversion of coal and water to steam at $135,000,000, 750,000 KW Memphis STEAM GENERATING PLANT, MEMPHIS, TENN. Memphis Light, Gas & Water Comn., 2996 Hy. 61 S., Memphis, Tenn. Bids Jan. 26, awarded 3/1. CD 2/1, under LB.

▲ **Memphis Light, Gas & Water Comn.**, 2996 Hy. 61 S., Memphis, Tenn., rejected bids Jan. 26, structural steel for the Memphis STEAM PLANT, MEMPHIS, TENN. LB $4,034,000. Will re-advertise. CD 2/1, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 27 Wisconsin
STREETS AND ROADS
March 27 Wisconsin

▲† **Ohio**—NIKE SITES—BA 4/3—U. S. Eng., New Post Office Bldg., Pittsburgh, Pa., 4 NIKE sites at Willowick, Bratenahl, Lake Front and Rocky River, Cuyahoga Co. $4,000,000-$5,000,000. Extended date CD 2/7.

BUILDINGS—BA

▲ **Ill., Chicago**—APARTMENTS—BA 3/23—Owner, c/o Hausner & Macsal, archts., 104 S. Michigan St., Zone 3, apartment, Lakeshore Dr. and Division St. $2,500,000.

BUILDINGS—LB & CA

▲ **Southwest Development Corp.**, 5546 Pearl Rd., Cleveland 29, O. Own Forces. $4,400,000, 350 HOMES, BRUNSWICK, O. CD 1/19.

▲ **Bert Gordon**, 18637 James Couzens, Detroit, Zone 35, Mich. Owner Builds. $4,500,000. 400 brick HOUSES, Herrington Hills, Updyke and Featherston Sts., north of Auburn Heights Rd., BIRMINGHAM, MICH.

▲ **Gordon-Begin Co.**, 18450 James Couzens Hy., Detroit 35, Mich. Owner Builds. $3,250,000. 250 brick HOMES, Carlyle and Merriman off Michigan, WAYNE, MICH.

—WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 28 Montana
STREETS AND ROADS
March 23 North Dakota March 28 Montana

▲ **Montana**—BA 3/28—Ebasco Service, Inc., engr., Trout Creek, Mont., Noxon Rapids Dam and powerhouse on Clark Fork River, 1,054 ft. long, 190 ft., high rein.-con., earthfill for Washington Water Power Co., W825 Trent St., Spokane, Wash. $85,000,000. Extended date. CD 2/29.

▲† **Texas**—BA 4/17—U. S. Eng., Box 1229, Galveston, Brays Bayou channel rectification in part, CIVENG-41-243-56-70. $1,000,000-$5,000,000. CD 3/5.

BUILDINGS—BA

▲ **Minn., St. Paul**—OFFICE—BA 4/12—State Dpt. Admin., P. T. Peterson, dir. Purchases, 19, State Capitol, 8 story, sub.-bsmnt. 146x282 ft., central office for Minn. State Hy. Dpt., Rice St. and Fuller Ave. $6,000,000. Plans deposit $200. Extended date: Ellerbe & Co., E. 505 First Natl. Bank Bldg., St. Paul, archts. CD 2/21.

HEAVY CONSTRUCTION—LB & CA

▲ **Union Pacific R. R.**, W. C. Perkins, ch. engr., 1416 Dodge St., Omaha 2, Neb. Own Forces. $17,000,000. 198.99 mi. new 133-lb rail laid in Neb., Colo., Wyo., Utah, Calif., Idaho and Ore.; re-ballasting 181.50 mi. Wyo., Utah, Colo., Kan., Nev., Idaho and Ore.; 47.11 mi. light rail will be replaced on branch lines with heavier second-hand rail; 1 million ties will be replaced on railroad's 10,000 mi. of road, NEBRASKA, COLORADO, WYOMING, UTAH, CALIFORNIA, IDAHO, OREGON, KANSAS, NEVADA.

BUILDINGS—LB & CA

▲ **Knutson Constr. Co.**, 3803 Main St., Houston, Tex. LB $3,628,000, est. $3,300,000. 13 story, bsmnt. Memorial HOSPITAL and PROFESSIONAL BLDG. and GARAGE, HOUSTON, TEX. Memorial Hospital, 602 Lamar St., Houston, Tex. Bids Feb. 22. CD 1/31.

▲ **Manhattan Constr. Co.**, 1811 Crawford St., Houston, Tex., LB $3,016,400. multi-story OFFICE to be known as "Adams Oil Center", HOUSTON, TEX. Ada Oil Co., c/o K. S. Adams, Jr., 609 Hughes St., Houston, Tex. Bids Feb. 23, CD 2/7.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 28, April 4 California
STREETS AND ROADS
March 28, April 4 California

BUILDINGS—BA

▲† **Calif., Long Beach**—HOSPITAL—BA 4/24—Veterans Admin.; Munitions Bldg., Wash., D. C., 3 story, bsmnt., approx. 295,000 sq. ft. Hospital Building No. 122 addn., Veterans Admin. Hospital. $8,000,000. Welton Becket & Assoc., 5667 Wilshire Blvd., Los Angeles 36, archts. CD 5/18.

BUILDINGS—LB & CA

▲ **Vinnell Co., Inc.**, 1145 Westminster St., Alhambra, Calif., CA, $4,563,000. ENGINEERING BLDG., tower, CAFETERIA, ENGINEERING TEST BLDG. and utilities, HAWTHORNE, CALIF. Northrop Aircraft, Inc., 1001 E. Broadway, Hawthorne, Calif. CD 1/25.

▲ **Oddstad Homes**, 727 Shasta St., Redwood City, Calif., Owner Builds, $60,000,000. 3,000 HOME Subdivision, Crestmont No. 1, Skyline and Redwood Rd., OAKLAND, CALIF. Vernon Demers, 2161 Shattuck Ave., Berkeley, Calif., archt.

▲ **Koppers Co., Inc.**, Koppers Bldg., Pittsburgh, Pa., CA, $5,000,000. design and construct, PLANT to process ethylene into low-pressure polyethylene, Wilmington Ave. and Sepulveda Blvd., WILMINGTON, CALIF. Brea Chemicals Inc., (sub Union Oil Co.), 714 W. Olympic Blvd., Los Angeles, Calif.

CANADA

BUILDINGS—BA

▲ **Ont., Toronto**—WOMEN'S—BA 3/26—City, City Hall, 2 story, part bsmnt., 170x180 ft., and 1 story, 240x308 ft. annex, women's bldg., Canadian National Exhibition. $3,500,000. Plans deposit $100. Page & Steele, 72 St. Clair Ave. W., archts. Hooper & Yolles, 111 Richmond St. W., engrs. CD 1/17.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲† **M-B Contg. Co., Inc.**, Lloyd Bldg., Seattle 1, Wash. CA $8,944,575, extending and strengthening runway, hardstands and truck-fill stand, Elmendorf Air Force Base, Inv. 56-31, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Feb. 14. CD 2/17, under LB.

BUILDINGS—LB & CA

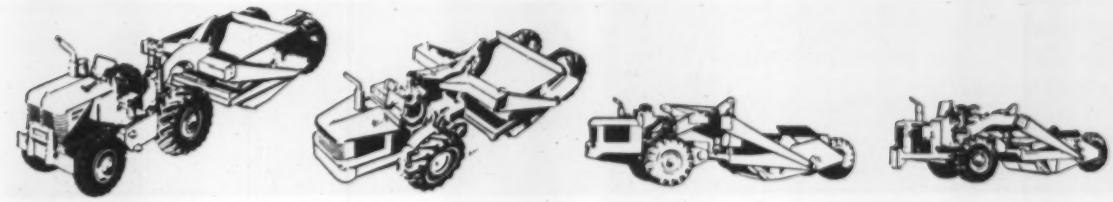
▲† **S. S. Mullen, Inc.**, 621 9th Ave. N., Seattle, Wash. LB $3,477,306. BARRACKS, MESS HALL BLDG., RADIO RECEIVER BLDG., GARAGE and RIGGERS SHOP, EMERGENCY POWER and HEATING PLANT, TERMINAL EQUIP. BLDG., rein.-con. water supply sys., etc., Naval Station, Spec. 37594, KODIAK, ALASKA. P. Wks. Officer: 17th Naval Dist., 908 7th Ave., Seattle, Wash. Bids Mar. 1. CD 1/20.

AMERICANS ABROAD

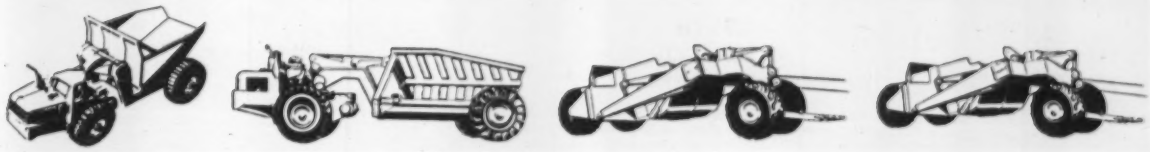
BUILDINGS—LB & CA

▲ **Hotelbau Gesellschaft**, G.M.B.H., West Berlin, Germany. CA Est. $4,500,000. HOTEL, WEST BERLIN, GERMANY. Hilton Hotels International, Waldorf Astoria, New York 22, N. Y., U.S.A. Pereira & Luckman, 9220 Sunset Blvd., Los Angeles 46, Calif., U.S.A., archts.

(Proposal Advertisements see p. 133 to 135)



NOW ... for East Coast PARTS SERVICE



a WOOLDRIDGE Factory Parts Warehouse

serving THE COMPLETE SCRAPER LINE WOOLDRIDGE DISTRIBUTORS from

Shown is a typical section of the well equipped Parts Warehouse at Perth Amboy, completely stocked and already serving the Eastern Earthmoving Industry.

PERTH AMBOY, NEW JERSEY

Your Wooldridge Distributor's parts stocks now have the additional backing of another complete Factory Parts Warehouse. Ask him to demonstrate the service now available to you with THE COMPLETE SCRAPER LINE.

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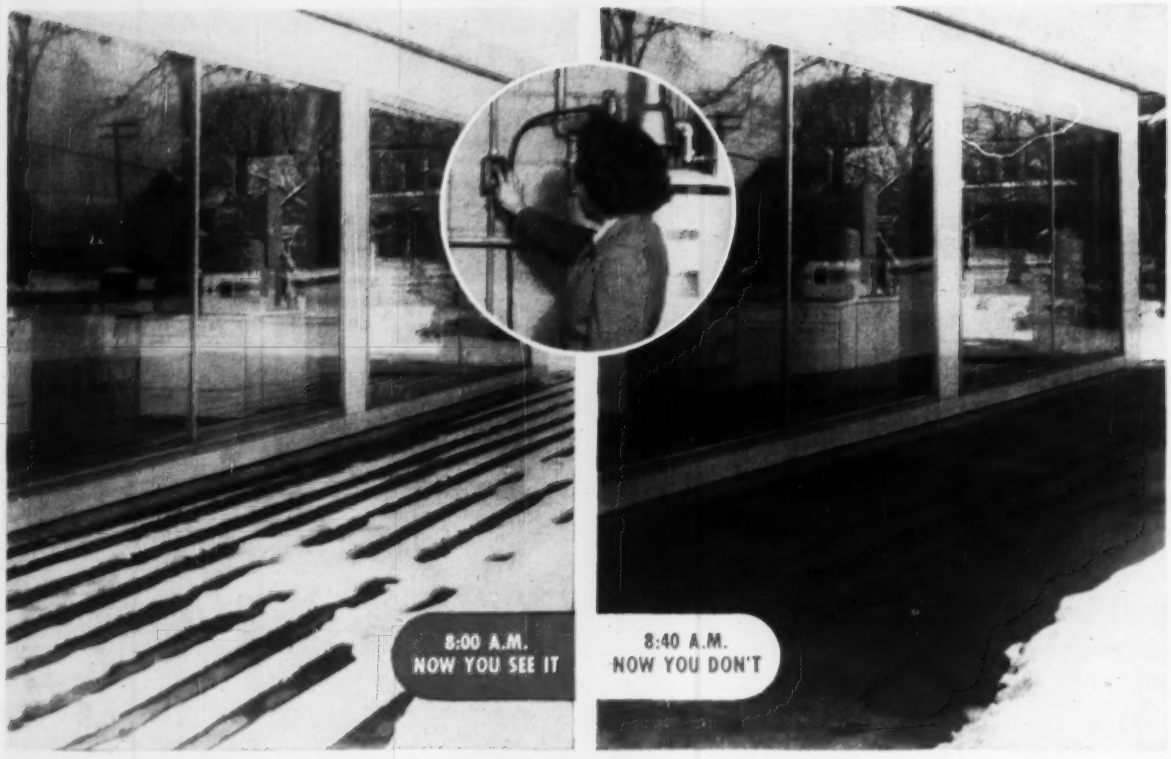
WOOLDRIDGE

WOOLDRIDGE MANUFACTURING DIVISION
CONTINENTAL COPPER & STEEL INDUSTRIES, INC.
Sunnyvale, California, U.S.A.

produced by specialists
—pace-setters in design
in widest capacity range



8-year old WROUGHT IRON PIPE SNOW MELTING SYSTEM still performing WINTER MAGIC

Giving winter snows the "hot foot" is an old story for The Protane Corporation, Erie, Pa.

Their snow melting system dates back to 1947 when a network of wrought iron pipe grids, 12-feet wide and 51-feet long, was installed under the sidewalk in front of their LP-Gas service building.

How efficiently the system has worked since installation is shown in the above photographs which were taken after a four-inch snowfall. The picture at the left illustrates the melting in process. Here, a hot water and antifreeze solution, flowing through the embedded pipes, is clearing the snow. Note that there is no run-off water. The snow melts, and quickly evaporates. In the picture at the right, taken 40 minutes later, all the snow has disappeared and the sidewalk is virtually free of moisture.

Starting the system is a simple matter. A push of a single button (see insert photo above) activates a high velocity pump and hot water is circulated through the wrought iron pipe system.

The Protane Corporation is gratified with the efficiency of this automatic "winter magic." But the real record, as far as they're concerned, is the trouble-free operation. "Eight years without maintenance, and the system is still going strong," is their report.

There are good reasons for the dependable, trouble-free service of wrought iron pipe in snow melting systems. You'll find complete information on why wrought iron lasts long, at lower cost per year, in our bulletin, *Byers Wrought Iron Pipe for Snow Melting Systems.* Write for a copy:

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N. Y.

Available in Canada and throughout the world.

BEST FOR SNOW MELTING BECAUSE . . .

It resists corrosion longer . . . it provides high heat transmission . . . it expands and contracts at virtually the same rate as concrete . . . it forms and welds easily on the job . . . it bends true, without springback . . . it assures sound welds and sharp, full depth threads . . . it withstands installation damage. No doubt about it . . . the advantages of wrought iron pipe for snow melting systems *start with installation* and *continue in service.*

BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY STEEL PRODUCTS

Lock Includes Highway Tunnel

Earthwork Bidding Takes $20 Million Contract on Robinson Bay Lock on St. Lawrence Seaway

The Robinson Bay Lock on St. Lawrence Seaway with miter gates, an emergency vertical lift gate, and about 3,400 lin ft of roadway passing through a tunnel under the lock will cost $20,172,451.

The contract covers the construction of the lock, 860 ft long, 80 ft wide, and 30 ft deep over the sills, with a maximum lift of 49 ft; excavation, backfill and grouting, frame and cover assemblies, and wall protection. The owner will furnish these items: wire rope fenders, lock gate operating machinery, generator unit, dewatering pumps, stiffleg derricks, electric unit heaters, stop logs, and pick-up beams.

Work is for the Buffalo District Office of the Corps of Engineers. For their hydraulic tests to solve design problems of the 46-ft vertical gate, see ENR, Oct. 27, 1955, p. 52. R. F. Airis, Massena, New York, is area engineer.

The contract went to the joint venture Morrison-Knudsen Co., Inc., New York, Walsh Construction Co., New York, and Perini, Quebec. Their bid on earthwork items, 17.2% below the second low bid, kept their total 1.3% below the second bid and 6% below the engineer's estimate. Each of the contractors has previous contracts for the St. Lawrence Seaway or Power work.

The contract price for Robinson Bay Lock is based on the alternate that asks for portland cement mixed with natural cement. The other alternate, based on the use of portland cement only, drew a low bid of $20,487,596.

Concrete must have a cement content ranging from 2.5 to 6 bags per cubic yard, according to structural requirement and size, type, and gradation of aggregates used (6", 3", 1½"). Federal Specifications WW-P-421, Type I or II, Class 150, is applied for bell and spigot cast iron pipe and WW-P-356, Type A or B, for threaded cast iron pipe.

Work started January 23, 1956 and is scheduled to be completed in three stages: 1. all work, except final clean-up, seeding, sodding, and canal excavation in the area of the site that is occupied by the Barnhart Island and Long Sault Island extension highways and railroads, by January 1, 1958; 2. final clean-up by June 1, and 3. seeding and sodding by October 1 of the same year. A period of 200 calendar days after the lock has been put in operation is allowed to test and adjust the equipment and to complete the final clean-up for the acceptance of all work. Liquidated damages are $1,000 per calendar day after January 1, 1958 and $2,000 after June 1, 1958.

This schedule appears tight, especially considering an expected shortage of labor in this area. During the time allowed, 500,000 cubic yards of concrete are to be placed in two construction seasons which normally last 8 or 9 months in St. Lawrence County.

To ease traffic on the highways, the Corps of Engineers is encouraging rail transportation and requests that all concrete aggregate materials be shipped by rail.

Minimum wage rates include $1.90 to $2.40 for unskilled laborers, $2.45 to $3.30 for equipment operators, $3.00 to $3.55 for electricians, $3.35 for cement masons, and $3.40 for iron workers.

For earlier unit prices on St. Lawrence Seaway and Power contracts see ENR Aug. 12, 1954, p. 21; Feb. 24, 1955, p. 78; Apr. 21, 1955, p. 154; and July 7, 1955, p. 96.

The three low bidders on Robinson Bay Lock are:

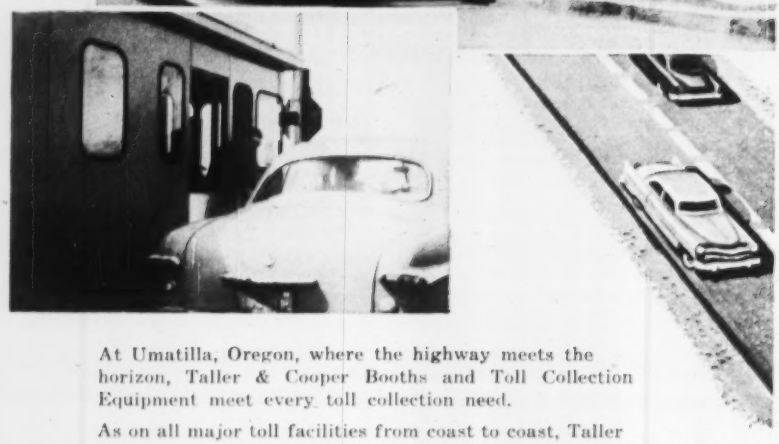
1C	Morrison-Knudsen Co., Inc. Walsh Const. Co., New York Perini, Quebec	$20,172,451
2	Merritt, Chapman & Scott Corp., New York	$20,448,296
3	Al. Johnson Const. Co., Minneapolis — Peter Kiewit, Omaha Art Johnson, New York Condon-Cunningham Co., Omaha	$21,397,565
EE	Corps of Engineers, Buffalo	$21,485,512

Bids: 1-10-56 Items	Unit	Quantity	Unit Prices 1C	 2
General Work				
Excav, common	cy	3,440,000	$0.80	$0.90
rock	cy	13,000	11.00	7.00
Embankment, dike	cy	500,000	0.20	0.45
uncompact	cy	132,000	0.08	0.20
Bkfl, random, compact	cy	1,380,000	0.30	0.50
select, extr compact	cy	137,000	0.20	0.65
Filter material	cy	68,000	2.95	4.65
Pervious fill, compact	cy	5,500	0.85	1.00
Roll, addnl, for compact	hr	350	16.20	12.00
Rock toe	cy	1,000	5.25	10.00
Riprap, dumped	cy	20,000	5.40	8.00
hand placed, grout	cy	1,340	26.00	30.00
Piezometers	ea	29	122.00	360.00
Derrick stone	cy	11,000	11.10	8.00
Equip, drill & grout, mobilz & demobilz	ls	job	6,210	1,000
Drill, core, 3"-holes	lf	16,000	5.25	1.20
diamond, 1⅝" holes	lf	30,000	3.55	2.75
Test, pressure	hr	200	12.90	13.00
Portland cmt in grout	bag	20,000	1.45	1.40
Grout, place	cf	20,000	3.45	2.75
Grout hole, connections	ea	1,500	5.00	5.00
Monolith joint grouting, pipe syst for	ls	job	5,850	5,000
wash & test	hr	50	11.00	50.00
grout for	bag	100	12.00	7.00
Drill core in conc, 10"	lf	60	24.00	25.00
Conc, 6"-agg	cy	500,000	17.70	18.00
3"-agg	cy	11,500	18.70	19.00
1½"-agg	cy	900	21.30	80.00
Portland cement	† bbl	413,000		5.00
used with natl cmt	† bbl	309,750	5.65	5.00
Natural cement	† bbl	103,250	5.00	4.00
Steel reinf	lb	2,500,000	0.142	0.13
Metal fabric	lf	11,000	0.21	0.30
Water stops, copper	lf	9,500	3.62	4.00
rubber	lf	650	2.00	4.00
Electrical Frame and Cover Assemblies				
Frame & cov, type B3236 for elec MH & hndhls	ea	8	486.00	300.00
type B3234, elec MH	ea	4	245.00	300.00
type B3210, elec hndhls	ea	10	342.00	300.00
for type F hndhfls	ea	24	167.00	166.00
for hndhls at tunn portals	ea	2	425.00	350.00
Frame and Cover Assemblies on Tops of Lock Walls				
Frame & cov assemb for recess of miter gate gear	ea	4	6,550	5,000
motor	ea	4	608.00	800.00
fill & empty culv blkh	ea	8	450.00	350.00
stop log-lock wall	ea	4	226.00	200.00
lower pool supply culv downstream blkhd	ea	1	191.00	200.00
upstream blkhd	ea	1	183.00	200.00
fender hydr equip, No. 1, 2, 3, N wall & aux fender A, both walls	ea	5	500.00	500.00
fender hydr equip, No. 1 & 2, S wall	ea	2	234.00	300.00
3, N wall	ea	1	670.00	200.00
dewater pit, opening 4'6"x3'2"	ea	2	172.00	250.00
2'x2'	ea	1	84.00	200.00
mooring bitt	ea	7	136.00	200.00
tainter valve machy	ea	4	3,810	3,000
	ea	4	1,120	1,500
tunn drain culv valve	ea	1	415.00	400.00
lift gate	ea	2	2,530	2,500
hydraulic	ea	2	540.00	500.00
dewater culv valve	ea	1	166.00	200.00
connection, fender 3, N wall	ea	1	214.00	250.00
Fender recess frames, both walls	lb	8,000	0.43	0.35
conc cov, both walls	sf	1,948	10.20	5.00
stl plat cov, N wall	ea	3	84.80	50.00
Wall Protection Items				
Wall armor, str stl	lf	26,000	11.35	9.00
Plate, str stl, recess protection	lf	3,600	10.22	8.50
parapet curb protect	lf	1,550	32.00	24.00
wall protection	lf	3,640	9.28	6.50
gage well protection	lf	250	14.50	6.00
Cap, cast steel, parapet curb	ea	34	100.50	90.00
lock & guide wall	ea	54	83.20	27.00
Fender assemb, timber	lf	3,770	19.80	22.00
Miscellaneous Items				
Snubbing buttons	ea	104	218.00	100.00
Ladders, lock wall	lf	690	23.20	18.00
guide wall	lf	110	28.50	22.00
Hatch cov, type VA-15	ea	12	305.00	200.00
type VA, special	ea	1	288.00	250.00
Grate & frame, crossover gallery gutt & cable	lf	29	6.93	10.00
Trash racks, LPS culv	ea	8	285.00	300.00
dewatering culv	ls	job	1,277	1,200
Door, hollow met, doubl	ea	1	600.00	500.00
singl	ea	2	225.00	300.00
Ladder safety device, tunn drain culv recess	ea	1	835.00	500.00
LPS culv valve recess	ea	1	510.00	350.00
dewatering pit	ea	1	454.00	350.00
fill & empt culv intake	ea	24	96.50	200.00
Ladder rungs	ea	888	11.45	10.00
Diesel fuel system	ls	job	1,470	3,000
Bulkhead frame, miter gate motor shaft	ea	4	95.25	100.00
LPS culv, downstream	ls	job	102.00	1,000
Bulkhead, LPS culv, upstr	ls	job	2,980	2,500
Cable riser metals, upstream, N wall	ls	job	6,200	6,300
S wall	ls	job	6,820	6,500
downstream, N wall	ls	job	15,100	12,500
S wall	ls	job	14,900	12,500
Float moor bitts, compl	ea	7	5,200	3,500
Met, embed, stop log recess, upstream	ls	job	26,900	11,000
downstream	ls	job	29,200	9,000
storage pit	ls	job	3,770	3,500

at Umatilla

TALLER & COOPER EQUIPMENT

keeps track of toll traffic



At Umatilla, Oregon, where the highway meets the horizon, Taller & Cooper Booths and Toll Collection Equipment meet every toll collection need.

As on all major toll facilities from coast to coast, Taller & Cooper equipment was chosen because it offers a completely integrated toll collection system. Booths were designed for efficient, comfortable performance of personnel; and scientific collection equipment insures accuracy and revenue protection.

Be sure of the best in toll collection systems by counting on Taller & Cooper's 25 years of experience to help you in your planning.

WRITE TODAY for design and construction details

TALLER & COOPER, INC.

ENGINEERS • MANUFACTURERS

TOLL BOOTHS
TOLL COLLECTION SYSTEMS

75 FRONT STREET • BROOKLYN 1, N. Y.

TALLER & COOPER TOLL COLLECTION EQUIPMENT IS USED ON EVERY MAJOR TOLL FACILITY IN THE U. S.

. . . Unit Prices

Bids: 1-10-56 Items	Unit	Quantity	Unit Prices 1 C	2
Cable trench frames & cov, spread rm, upstr	ls	job	1,180	1,000
downstr	ls	job	2,070	1,800
Metals, fender recess, No. 1, N&S walls	ls	job	9,000	9,000
No. 2, N&S walls	ls	job	9,000	9,500
No. 3, N&S walls	ls	job	8,900	8,500
aux fender A, N&S wall	ls	job	8,150	8,000
lift gate recess	ls	job	7,700	7,500
valve recess & culv, tunn drain culv	ls	job	1,480	1,500
valve recess, dewater culv	ls	job	5,950	4,000
LPS culv	ls	job	3,470	1,800
miter gate motor & gear	ls	job	870 00	1,500
dewatering pit	ls	job	4,540	5,000
gage well, upper guide wall	ls	job	662 00	700 00
lower guide wall	ls	job	595 00	700 00
Dewatering pit, mech work	ls	job	4,240	4,500
Steel, misc	lb	37,000	0 515	0 43
Handrail, access bldg	lf	25	4 00	8 00
stl pipe, exterior	lf	980	8 85	12 00
alum	lf	400	17 40	20 00
Plates, culv nose	ea	4	352 00	370 00
Wire fence, woven	lf	230	20 10	30 00
Timber, supp, in stop log storage yard	ea	27	67 00	60 00
Tile gages	lf	120	31 40	26 00
tunnel	ls	job	84,400	90,000
Tunnel, membrane, waterproofing for	ls	job	18,700	16,000
pneumatic mortar for	ls	job	18,800	21,000
highway	ls	job	149,000	196,000
Control house, upstream lock	ls	job	93,700	55,000
downstream lock	ls	job	97,500	65,000
Bikhd, cable gallery	ls	job	855 00	700,00
Exhaust fan, in water supply room	ls	job	189 00	200 00
Manholes	lf	350	68 80	65 00
CMP, culv, 18"	lf	48	4 75	15 00
Pipe, culv, 18"	lf	590	8 70	7 00
24"	lf	42	12 00	25 00
30"	lf	51	16 80	23 00
38"	lf	420	18 45	20 00
Drain struct, conc	cy	350	104 50	65 00
CMP, 11" x 18"	lf	200	4 75	10 00
CP, 12", perf, extr stre	lf	500	9 50	10 00
36", perf	lf	1,740	18 90	80 00
Pipe, 12", perf	lf	3,000	6 45	8 00
Ditches, paved	sy	1,900	13 75	13 00
CIP drain, 6"	lf	130	6 40	15 00
Miter gates, complete	ls	job	705,000	622,000
Culv valv & embed met	ea	4	20,800	25,000
blkhds & embed met	ls	job	41,100	18,000
Lift gate, vertical	ls	job	329,500	400,000
Elevator	ls	job	19,200	12,000
Valve, culv, LPS	ls	job	9,200	9,000
drain, A	ls	job	5,950	6,000
B	ls	job	1,775	2,000
dewater, lock, C	ls	job	6,100	6,000
Power driv, elec portabl	ls	job	745 00	800 00
Fender, wire rope, l	ea	3	21,400	4,000
aux, wire rope l	ea	1	15,200	3,500
Machy, vertl gate, l	ls	job	58,800	4,000
lock gate l	ea	4	4,600	2,000
lock valv, l	ea	4	8,450	1,500
Generator, diesel l	ls	job	3,130	3,000
Pump, dewater l	ls	job	3,400	3,000
Stiffleg derrick l	ea	2	5,560	4,000
Plant equip, water & air, l	ls	job	5,650	4,000
Heaters, elec unit, l	ls	job	3,240	3,000
Access building	ls	job	2,105	400 00
Stop logs l	ea	18	2,340	1,000
Conduit installation	ls	job	91,400	95,000
Grounding syst, elec	ls	job	11,300	9,000
Control center, north	ls	job	15,400	11,000
south	ls	job	12,550	6,000
Tunnel lighting	ls	job	40,900	18,000
vent syst	ls	job	10,851	6,000
comm & power duct syst electric	ls	job	24,600	23,000
Wiring	ls	job	14,600	6,000
Water suppl & dist syst	ls	job	59,800	54,000
Drain syst, interior	ls	job	76,000	70,000
Compr air pipe syst	ls	job	16,450	15,000
Sewage syst	ls	job	15,800	30,000
Embankment, highway	cy	4,000	0 31	1 00
Foundation course	cy	11,000	2 83	3 00
Shoulder drains	ea	53	31 20	50 00
Stone base crse, filled	cy	900	9 65	4 00
Waterproofing, upp sill	ls	job	4,270	4,000
Stone bases, penetrated	t	2,550	6 55	3 50
Bit matl, penetr method	gal	33,000	0 24	0 17
Asph conc plant mix	t	2,200	12 00	8 50
Seed & mulch	ac	159	358 00	330 00
Fertilizer	t	40	122 00	100 00
Sodding	sy	12,000	1 23	1 00
Field office	ls	job	33,200	40,000
Safety marks, paint	ls	job	125 00	2,000
Stone or gravel, cr	ls	job	6,200	7,500
Guard rail	lf	1,000	5 10	3 50
Parking area, paint	ls	job	627 00	200 00
Holes, 3", & grout anchors, drill	lf	3,500	3 40	5 00

• * Total of second low bid on this alternate: $20,487,596
• † Contract price based on this alternate. • LPS—lower pool supply

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

* Mar 22 — Wood Products, Glass, Explosives, Chemicals
* Mar 29 — Clay Products, Lime, Plaster, Paint, Roofing, Wage Rates, Building Board, Lath, Insulation
* Apr 5 — Cement, Aggregates, Ready-mixed Concrete, Asphalt

IRON AND STEEL PRODUCTS — PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$4.60	$4.50	$4.65	$9.25		$94.50	$113.00	$5.825	$7.90	$5.625	
Chicago Area	4.60	4.50	4.65	9.25	$5.45	94.50	113.00	5.825	7.90	5.625	
Pittsburgh Area	4.60	4.50	4.65	9.25	5.45	94.50	113.00	5.825	7.90	5.625	$11.50
Buffalo Area	4.60	4.50	4.65	9.25	5.45	94.50	113.00	5.825	7.90	5.625	11.50
Cleveland	.....	.....	4.65	9.25	5.45	.....	.....	.....	.....	.....	11.50
Youngstown Area	.....	.....	4.65	.....	.....	.....	.....	.....	7.90	.....	.....
Geneva	4.60	4.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	.....	.....	.....	.....	5.45	.....	.....	.....	7.90	.....	.....
Pueblo	4.90	5.35	5.10	.....	.....	.....	95.00	5.825	7.90	5.625	12.40

IRON AND STEEL PRODUCTS — F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot Rail steel	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq. ft., carload lots fob mill
Atlanta	.....	.....	.....	.....	.....	
Baltimore	8.03	7.52‡	.....	39.00	43.50	
Birmingham	7.28‡	7.08‡	7.08‡	51.00p	57.00p	
Boston	8.13a	7.82	7.82	44.00	48.50	$3.40
Chicago	7.43	6.23gu	6.23gu	49.00‡	60.00‡	
Cincinnati	7.90uk	7.56re	.....	41.00mn	45.50mn	$2.22
Cleveland	7.76	6.41c	.....	41.00‡	45.50‡	
Dallas	9.05	7.40	7.40	49.00	52.00	
Denver	8.95	8.00e	.....	54.00m	60.00m	$3.57
Detroit	7.90	7.38	.....	56.00	63.00	
Kansas City	7.95q	7.75	.....	49.00	60.00	
Los Angeles	8.15‡d	7.60	.....	54.50	60.50	
Minneapolis	7.79d	8.10‡	8.10‡	42.50	47.00	
Montreal	7.70-8.15‡C	7.50/8.65‡	7.50/8.65	65.00A	70.00A	
New Orleans	.....	7.05‡ks	.....	44.50	49.50	
New York	8.19	7.65‡y	7.65‡y	44.50mo	51.00mo	
Philadelphia	8.04	7.14	.....	42.50‡	47.00‡	
Pittsburgh	6.98	7.37z	6.95	39.78	41.90	
St. Louis	7.83e	6.75c	6.75c	57.00f	59.00f	
San Francisco	8.55	7.55‡	.....	47.50	53.00	
Seattle	5.35e	7.00e‡	.....	55.00me	61.00me	
Toronto	8.40*	7.25	7.25	53.50mo	67.50mo	

EXTRAS, per cwt. — Quantity: less than 700#, +50c; 700-1499#, +25c; 1500-7999#, +10c; 8000-19,999#, +2.20; +3 +$1.10; +4 +50c; +5 +62.5c; +6, +75c; +7 +45c; +8, +9, +10, +11 +35c. Bending: heavy, +50c; light, +$2 except in New York City and surrounding metropolitan area where bending must be done on the job). Engineering: details and placing from designs by others: over 50 tons, +45c; 200-500 tons, +50c but not over $45/ton; 20-200 tons, +60c but not over $200; 5-20 tons, +70c but not over $240; under 5 tons, +85c but not over $70. Design only: +60c

Quantity extras, per cwt. under 100#, +$6; 100-399#, +$3; 400-1999#, +1.25; 1000-1999#, +30c; 2000-4999#, base price; 5000-9999#, —10c; 10,000-19,999#, —20c; 20,000-29,999#, —30c; 30,000# and up, —70c

WELDED FABRIC REINFORCING	Per 100 sq. ft., carload lots fob mill
4 × 16 in., No. 5 & 10 wires — Joliet, Ill.; Donora, Pa.; Monessen, Pa.	$3.40
4 × 12 in., No. 8 & 12 wires — Joliet, Ill.; Donora, Pa.; Monessen, Pa.	$2.22
6 × 6 in., No. 6 & 6 wires — Joliet, Ill.; Donora, Pa.; Monessen, Pa.	$3.57

*‡ Delivered *a 2000-9999# *b 10,000-15,999#, fob city *c 20 tons or over *d 10,000-19,999# *e fob plant *f Incl. delivering in free zone *g CL *h list price; dominion tax exempt; add provincial and municipal taxes *i add dominion, provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered; contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p del. of 500 sq. yd. or more. *q 3c *r 2% off for cash *s 2,000-4,999# *t add 15c del. *u add 6.25c switch *v incl 15c del. *w 3.5c *x add 5c switch *y add 30c del. *z add 10c del. *A American made. *C Canadian made. † Number system replaces inch system of classifying bar sizes. New system is based on number of eighth inches in diameter of bar. *** Aver. of Canadian & American.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEX‡a	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 6" Pr Cl. 150	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 12" Saw Cl. 1	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 12 in. s.s.	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T 24 in. ds.	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T 36 in. ds.	CLAY DRAIN TILE ASTM C4-24 PER 1,000 ft., carload lots, f.o.b. 8 in.	CLAY DRAIN TILE ASTM C4-24 PER 1,000 ft., carload lots, f.o.b. 8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 24 in.
Atlanta	113.6	$1.56	$2.60	$.545	$1.27	$4.82	$12.925			$0.88m	$3.25m
Baltimore	122.9	1.56	2.60	.595	1.1475	4.50e	12.065	$178.20	$274.80	1.01	2.75
Birmingham	109.3	1.56	2.60	.44	.81	3.55e	10.37e	260.00‡	440.00‡	1.25m	2.75m
Boston	125.5	1.58	2.39	.672grt	1.296grt	5.31grt		197.40r	303.60r	1.54mg	3.65mg
Chicago	122.9	1.56	2.39	.90m	1.74m	6.25m	19.00m	150.00‡	270.00‡	1.00	3.65
Cincinnati	118.0	1.58	2.47	.665t	1.2825t	4.905t	12.505	240.00	370.00	.80m	2.95m
Cleveland	123.6	1.58	2.47	.539e	1.0395e	4.275t	11.275t	149.40m	231.60m	.85m	3.25m
Dallas	120.1	1.58	2.73	.439	.799	4.00b	9.176			.49	1.60
Denver	129.0	1.66	2.73	.45n	.78n	3.48n				.74m	2.50mg
Detroit	123.9	1.58	2.47	.85	1.65	6.45	17.50	240.00m	370.00m	.95	3.82
Kansas City	120.7	1.58	2.47	.61	1.105	4.54	12.75	250.00	480.00	.90	2.90
Los Angeles	131.1	1.66	2.39	.67‡	1.46‡	5.97‡	14.89‡	228.20‡	348.90‡	.95	2.75‡
Minneapolis	131.0	1.61	2.60	.78mo	1.42mo	6.25mo				1.66h	4.47h
Montreal	.....	.....	.....	1.02u	1.80u	6.30u	12.00u			1.17h	3.11‡
New Orleans	116.0	1.56	2.60	.51	.925	5.18	.....	350.00p	550.00p	.75	2.50
New York	121.5	1.58	2.39	.94	1.78	6.96	18.14			1.15	3.00
Philadelphia	120.9	1.56	2.39	.65	1.25	4.95e	12.65e	300.00‡	350.00‡	1.00A	3.95A
Pittsburgh	124.7	1.58	2.39	.468m	.864m	3.86m	9.78m	152.00	244.00	1.05A	2.50A
St. Louis	119.3	1.56	2.47	.56	1.03	4.22	9.80	180.00f	280.00f	1.30d	2.80d
San Francisco	131.1	1.66	2.39	.74d	1.62d	6.50d	16.47d	235.00f	392.00f	1.05m	3.30m
Seattle	131.1	1.66	2.39	.66b	1.26b	6.34	17.90	205.00e		1.00k	3.10k
Toronto	.....	.....	.....	.76	1.425	5.70		157.00	280.00	.87	3.05

*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

Mill	3½ to 6 in. Lap Weld† Galv.	3½ to 6 in. Lap Weld† Blk.	2½ & 3 in. Butt Weld† Blk.	2½ & 3 in. Butt Weld† Galv.	2 in. Butt Weld† Blk.	2 in. Butt Weld† Galv.	1½ in. Butt Weld† Blk.	1½ in. Butt Weld† Galv.	1 in. Butt Weld† Blk.	1 in. Butt Weld† Galv.	¾ in. Butt Weld† Blk.	¾ in. Butt Weld† Galv.	½ in. Butt Weld† Blk.	½ in. Butt Weld† Galv.	⅜ in. Butt Weld† Blk.	⅜ in. Butt Weld† Galv.
Lorain, Ohio					29.00	13.00										
Aliquippa, Pa.					29.00	13.00										
Sparrows Pt., Md.					27.00	9.00										
Benwood, W. Va.					29.00	11.00										
Youngstown, O.					29.00	11.00										
Indiana Harbor, Ind.					29.00	10.00										
Sharon, Pa.					29.00	11.00										
Wheeling, Pa.					29.00	11.00										
Erie, Pa.					29.00	15.00										
Fontana, Calif.					17.00	0.00										

† Threaded and coupled. a 3½ to 4 in. b 5 and 6 in. 46 in.

*‡ Delivered. *a PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 109.3; Burlington, N. J., 118.1. *b Extra strength ASTM C 200-44T *c 4-in., $113 *d SS361-A *e 30-in. *f 21 in. *g culvert pipe; reinforced, ASTM C 76-41 *h reinforced, ASTM C 75-41 *i reinforced, ASTM C 76-37 *j centrispun; no standard specs. in Canada *k 2% off for cash *l fob plant *m truck delivery *n LCL delivered, fob truck *o listed price based on LCL (no min.) *p freight allowed to destination in city *q ASTM C 13-40 *r CL fob origin, freight allowed *s 2 ft lengths *t 3 ft lengths *u CESA A 60-1941 specs. used *v standard strength *w ss; add 20% for d e.

* WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (based on approx. 3200 per net ton): Butt Weld ⅛ in., 8¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 78½¢. Lap Weld 3½ in., 92¢; 4 in., $1.08; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld — 1 in. black, + 50.25, galv., + 78.50; 1¼ in. black, + 50.25, galv. + 78.0, 1½ in. black, + 46.75 galv. + 74.25; Lap Weld — 2½ in. to 3 in. black + 52.50 galv. + 78.50; 4½ in. to 6 in. black + 49.50 galv. + 73.75 Add freight rates plus 3% transportation tax to get destination price.

CHEVROLET **CHAMPS OF EVERY**

NEW 1956 CHEVROLET

WEIGHT CLASS! CHEVROLET

New Chevrolet trucks for '56 bring you new heavies, middleweights and lightweights in eight great new series—new power and performance to save more money on your hauling job!

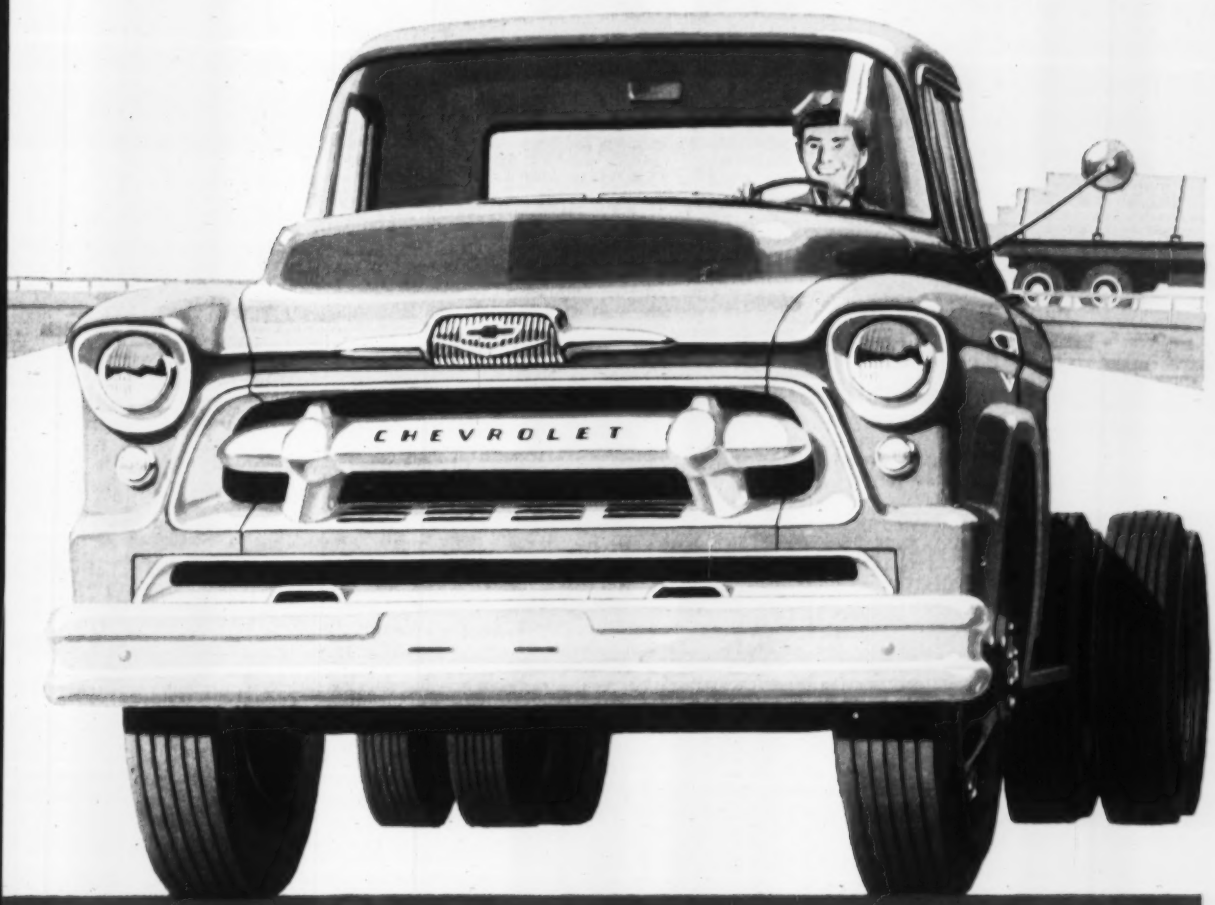
New Heavyweights—New Tandems! All-new heavyweights in 9 wheelbases, with maximum G.V.W. ratings up to a new high of 32,000 lbs.; G.C.W. up to 50,000 lbs.

Ultra-Modern Features! Tubeless tires, standard; High-Level ventilation and panoramic visibility; plus Concealed Safety Steps on most models.

Wider Range of Drives! There's an automatic drive in every series with new Powermatic for most middleweights and heavies; Hydra-Matic for light-duty models. Both extra-cost options. A new 5-speed transmission is standard in 9000 and 10000 series models; optional at extra cost in other heavies and most medium-duty models. New heavy-duty 5-speed is an extra-cost option in models with new Loadmaster V8.

A Modern V8 for Every Model! And introducing the completely new 322-cu.-in. Loadmaster V8, standard in new 9000 and 10000 series heavyweight models.

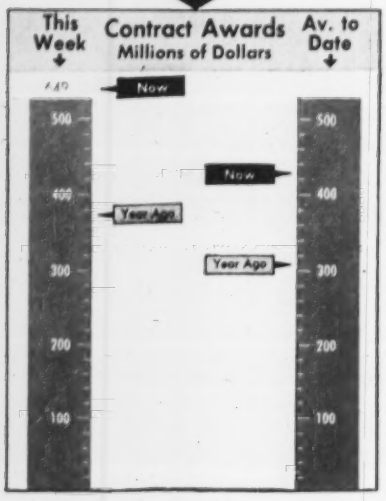
See Your Chevrolet Dealer and his new Task-Force line before you buy. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



TASK·FORCE TRUCKS

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	1956	Cum. 11 wks Chge %
	$ millions		
Federal	$50.3	$409.1	+8
State and Municipal	125.5	1,277.5	+35
Total Public	175.8	1,686.6	+28
Total Private	473.1	3,105.8	+44
U. S. Total	$648.9	$4,792.4	+37
By Type of Work			
Waterworks	$3.5	$54.0	−11
Sewerage	12.6	157.4	+96
Bridges	5.8	112.2	+6
Highways	35.3	445.2	+25
Earthwork, Waterways	24.2	140.6	+73
Buildings:			
Public, Excl. Hsg.	65.1	415.2	+14
Public Housing	8.5	98.8	+153
Private Housing	167.9	1,430.0	+5
Commercial	23.3	474.2	+76
Industrial	275.7	1,080.4	+149
Unclassified	27.0	384.4	+18
U. S. Total	$648.9	$4,792.4	+37

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

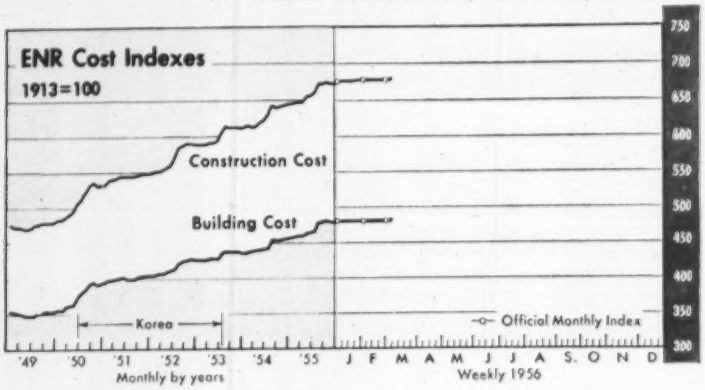
NEW CAPITAL FOR CONSTRUCTION

	Week of Mar. 8	1956	Cum. 10 wks Chge '55-'56 %
	$ millions		
Corporate securities	$58.5	$465.2	−23
State and Municipal:			
All Except Housg.	209.3	929.5	+30
Housing	...	20.3	−43
Federal Loans	0.3	18.3	...
Federal Aid	...	...	...
Total Nonfederal	$268.2	$1,433.3	+4
Federal Appropriations:			
In U. S.	$...	$34.4	...
Outside U. S.	...	...	...
Total New Capital	$268.2	$1,467.7	+7

Cost Indexes as of Now

ENR INDEXES (1913=100), 20-cities' average	1956 Mar. 8	Percent Change from last Month	Year
Construction Cost	681.18	+0.2	+5.1
Building Cost	483.52	+0.1	+5.2

To convert above indexes to 1926=100: Divide Construction Cost by 2.880; Building Cost by 1.845.
1949=100: Divide Construction Cost by 4.770; Building Cost by 3.538.



CONTRACTS AWARDED

Millions of dollars	Feb.	1956 2-Mos.	Percent Change from 1955 Feb.	2-Mos.
Total U. S., ENR reported	$1,781.2	$3,374.0	+64	+42
Private	1,243.8	2,110.6	+85	+43
Public	537.4	1,263.4	+31	+40
State and Municipal	414.6	946.0	+35	+49
Federal	122.8	317.4	+18	+19
ENR Volume Index, 1913=100	736	691	+60	+36

NEW CAPITAL FOR CONSTRUCTION

Millions of dollars	Feb.	1956 2-Mos.	Percent Change from 1955 Feb.	2-Mos.
Total U. S.	$606.1	$993.2	+15	−5
State and Municipal Bond Sales	383.1	644.4	+20	+8
Corporate Security Sales	216.7	333.8	+9	−22
Federal Loans, Aid (nonfederal work)	6.3	15.0	−28	−11
Federal Appropriations (federal work)	0.0	0.0	0	0

MATERIALS SHIPMENTS Unit	1955 or 1956 Nov.(N) Dec.(D) Jan.(J)	Mos.(11) Mos.(12) Mos.(1)	% Change from '54 or '55 Mo.	Year Cum.
Portland cement, Bur Mines, thous bbls	21,682(N)	275,699(11)	− 5	+ 7
Concrete Paving Awards, PCA thous sq yd	6,920(J)	6,920(1)	− 3	− 3
Fabricated Structural Steel, thous tons	250(J)	250(1)	+11	+11
Bookings, AISC thous tons	405(J)	405(1)	+68	+68
Reinforcing Bars, Net, AISI thous tons	194(D)	2,165( )	+58	+24
Lumber, NLMA mil fbm	2,778(D)	39,605(12)	− 9	+ 7
Orders mil fbm	2,965(D)	39,744(12)	− 6	+ 6
Production mil fbm	2,888(D)	39,105(12)	− 6	+ 5
Douglas Fir Plywood, DFPA, ⅜" basis Production (ave. per week) mil sq ft	101.7(J)	101.7(1)	+ 9	+ 9
Orders (average per week) mil sq ft	95.5(J)	95.5(1)	− 4	− 4
Clay Products, Bur Census Brick, Unglazed, Common, Face mil bri	581.0(N)	6,531.8(11)	+ 6	+15
Vitrified Clay Sewer Pipe thous tons	157.2(N)	1,756.5(11)	+12	+16
Structural Tile, Unglazed thous tons	64.4(N)	774.9(11)	−10	− 7
Asphalt Products, Bur Census Asphalt Roofing thous sales sqs	2,707(D)	62,931(12)	−14	+ 6
Asphalt Siding thous sales sqs	74(D)	1,292(12)	−12	− 9
Aluminum, Wrought, Net, Bur Census Plate, Sheet, and Strip mil lb	137.1(N)	1,404.0(11)	+32	+33
Roll Struc Shapes, Rod, Bar, Wire mil lb	31.7(N)	336.6(11)	+20	+ 1
Extr Shapes, Tube Blms, Tubing mil lb	67.6(N)	722.1(11)	+40	+37

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS thous	2,243(J)	2,243( )	0	0
Contractor Failures, Dun & Bradstreet				
Number	126(J)	126(1)	+45	+45
Liabilities thous	$6,163(J)	$6,163(1)	−32	−32

* Average per month

Another Outstanding

MADSEN ASPHALT PLANT INSTALLATION

EFFICIENT • CLEAN • WELL-ARRANGED

FOR MAXIMUM, PRECISION-MIX PRODUCTION

MADSEN engineers and the SATICOY ROCK COMPANY of Ventura, California, jointly worked out the details of this outstanding asphalt plant set-up.

Plant shown is the popular MADSEN Model 481 4000-lb. Batch Capacity Asphalt Plant. It is in full operation. Note the spacious working area around the plant, the well laid-out drives, and the underground asphalt storage area in the foreground. The SATICOY ROCK COMPANY selected the MADSEN Model 481 for its fast charge-mix-discharge cycle, its ability to produce close specification mixes on a production basis, and the many MADSEN features which make this plant one of the easiest to service and most economical to maintain.

If you are considering the purchase of an asphalt plant, talk to your MADSEN Distributor about the MADSEN Model 481. Learn about the 25 big MADSEN features that make this plant so outstanding. And, learn how MADSEN engineers can help you in planning the most profitable installation for your particular needs.

Equipment that Serves

SOME FACTS ABOUT THE ABOVE INSTALLATION

- OWNER—The Saticoy Rock Company, Ventura, California
- ASPHALT PLANT—MADSEN Model 481 4000-lb. Batch Plant
- MIXER—New MADSEN Model 440 Twin-Shaft Pug Mill Mixer
- VIBRATING SCREEN—SYMONS 48" x 14"—2½ Deck
- DRYER—MADSEN Counter-Flow 84" x 30'
- BURNER—12" Low-Pressure Air-Oil Burner Unit
- DUST COLLECTOR—MADSEN No. 380 "On-The-Square" Dust Collector
- WET SETTLING EQUIPMENT—MADSEN Triple Wet Tube Dust Washer
- TYPE OF FEED—6-Compartment Feed Bunker (Built by customer)
- POWER DETAILS—
  - Mixer . . . 100 H.P. Electric Motor
  - Hot Elevator . . . 15 H.P. Gear-Head Motor
  - Dryer . . . 50 H.P. Electric Motor
  - Burner Blower . . . 50 H.P. Electric Motor

MADSEN WORKS

CONSTRUCTION EQUIPMENT DIVISION

Baldwin-Lima-Hamilton Corporation

14120 E. ROSECRANS AVE., P. O. BOX 38, LA MIRADA, CALIFORNIA

BLH

CONSTRUCTION EQUIPMENT DIVISION

Work Put-in-Place

February matches volume of same month last year

Despite an anticipated 5% seasonal decline from January to February, construction put-in-place last month matched the record volume of February 1955, the Department of Commerce and Bureau of Labor Statistics announced last week.

The February figure of $2.7 billion brought the cumulative two-month total to $5.5 billion, virtually the same as the January-February 1955, figure. On a seasonally-adjusted basis, outlays for construction put-in-place are running at an annual rate of $41.5 billion, as against the $42.3 billion actually put-in-place last year.

Most of the 5% decline from January to February was due to a continued down-trend in housing, the government reported. Private spending for residential construction during the month of February dropped below the $1-billion mark for the first time since April 1954.

Aside from housing, the picture was generally bright. The value of work put-in-place on private, non-residential building set a new February record.

Industrial building also set a record, topping the figure reached in January 1956, by 2%.

While all major types of construction contributed to the 4% decline in public spending in February, most types declined less than usual for the season. Outlays for highway construction, schools, and sewers and water works posted new records for the month of February.

Sub Sues City

Seeks sale of airport to satisfy $79,000 lien

A Connecticut subcontractor is seeking a court order for the sale of the Portland, Maine, Municipal Airport, to satisfy a $79,000 mechanic's lien.

Cosgrove Construction Co., Inc., of Branford, Conn., was subcontractor on a $1-million project involving construction of a new 5,000-ft runway. General contractor on the project was American Paving Co., of Meriden, Conn.

Work on the runway was halted last Nov. 29, a week after the City of Portland rejected a request made by Edward J. Sangivanni, president of American Paving Co., for extra money to excavate a large area of ledge that had been uncovered.

The city has sued in Federal District Court to force Sangivanni's bonding company to take over and complete the remaining two-thirds of the project. In a countersuit Sangivanni charges that he encountered 70,000 cu yd of ledge where plans showed only earth. City officials ruled he was not entitled to extra money because the contract called only for "unclassified construction." Sangivanni received the contract on a low bid of $788,000. This was $251,000 under the second low bid.

Cosgrove filed a mechanic's lien under a Maine law that permits recovery of costs for labor and materials put in place—and permits sale of the property to pay the claim, if necessary.

Cosgrove charges that he has received only $137,000 for $217,000 worth of work done. Sangivanni, in his suit, claims to have received only $193,000 on work valued to date at $443,000.

Progress has not been materially delayed so far because the general contractor had planned to suspend operations for three months during the winter. Now, the city has employed a local contractor, at a cost of $34,000 to protect the work already performed.

The project is being financed jointly by the federal government, state and city.

Business Briefs . . .

• **Mortgage and lending slackens**—The volume of new mortgage lending by savings and loan associations dropped in January. Total loans closed during the month amounted to $652 million, down 12% from last year's record January level.

• **Tile makers expand**—Manufacturers of ceramic tile are expanding plant capacity to increase production 35% by the end of 1956. The tile business is booming. Sales of ceramic wall and floor tile rose from $15.8 million in 1940 to a record $105 million in '55.

• **Bond approvals up**—While municipal bond sales have been setting a record pace, voters have been busy approving new issues to be sold in the coming months. During January and February, voters approved $458.9 million in new bond issues.

• **N. Y. housing starts drop**—Private housing starts in New York State declined to the lowest January level since 1952. The total—4,430—was 19% under January 1955, according to state housing officials.

• **Dividend policy**—Directors of Merritt-Chapman & Scott Corp. voted to pay dividends of 6% in stock and $1 in cash, rather than all in cash as in recent years. The company, which has been paying $2 a year in dividends reported that gross revenues last year totaled $375.4 million.

Soviet Twist: Let the Seller Beware

Veteran California builder A. F. Oddstad, who thought he sold a visiting Russian delegation a house (ENR Nov. 10, 1955, p. 22), now wonders if the Soviet delegation sold him a bill of goods.

The mass production techniques used by Oddstad for a project at San Bruno, Calif., intrigued the Russian housing experts. And, to the surprise of their American hosts (the National Association of Home Builders), I. K. Kozuilia, Minister of Urban and Rural Construction, announced that the Russians wanted to buy one of the Oddstad houses that would be identical to the model home shown.

Price offered no apparent obstacle as Oddstad quoted a figure of $8,000 for house plus $4,000 for the furniture, FOB San Francisco docks. Kozuilia discussed at length the best methods of shipping the house to Moscow, agreed that the total cost of about $40,000 to get the house to Russia was not exorbitant, and assured Oddstad that details of the transaction would be handled by Amtorg, the Soviet trading agency. But Oddstad found that it isn't that easy to sell a house to the Russians. In fact, he's not sure even now that they're going to buy the house.

Despite voluminous correspondence with Amtorg, the California builder finds the deal is just about where it was when the Russian housing experts walked out of the model home and headed back to the Soviet Union. He has no down payment, no contract, no written agreement of any sort. The Department of Commerce hasn't issued an export license for the house—because it hasn't been asked to do so. As of now, the Russians have the publicity, and Oddstad has the house.

Delegates take a careful look at major goals as the AFL-CIO building trades open their Second Legislative Conference in Washington—and then converge on Capitol Hill to explain to senators and congressmen . . .

Why Labor Wants What It's Asking

The AFL-CIO building trades successfully launched their legislative program last week when more than 2,200 union members converged on Washington from all parts of the nation to tell their story to Congress.

Although their most important mission was to seek support for changes in the Taft-Hartley Act, they were more immediately concerned with inclusion of prevailing wage requirements in the pending multi-billion highway and school construction programs. Their attention was also focused on passage of the 2,000,000-unit Lehman Housing Bill and modernization of the Davis-Bacon Act.

Meeting in the mammoth ballroom of Washington's sprawling Sheraton-Park Hotel for the Second Legislative Conference of the Building and Construction Trades Department of the AFL-CIO, the delegates listened attentively to a host of speakers, armed themselves with facts and figures and then fanned out to Capitol Hill to explain their goals.

When reports were tallied at the close of the well-organized and arduous four-day conference, the delegates felt encouraged. Most had received friendly receptions from their senators and congressmen, and many had obtained assurances of full or partial support. For the building trades, it looked like progress in the right direction.

Much of the success of the conference was attributed to the candid leadership of President Richard Gray, who made it clear at the outset that the purpose was simply to educate and tell "with courtesy and due respect" the story of building tradesmen to congressmen without coercion or financial inducement of any kind.

Considered by its sponsors to be "reasonable, justified and in the public interest," the program was presented —and will be pushed—on its merits. Through the program, the building trades are seeking legislation that will preserve and strengthen the trade union movement and what it has achieved. They are following one of the basic tenets of the AFL-CIO—that the welfare of America lies in the welfare of the great mass of its citizens who work for wages.

• **Prevailing wages**—On the economic front, the unions' most pressing problems relate to highway and school construction. In these, the building trades have a three-fold interest: The national need for vast improvements in both areas, the tremendous construction activity which the programs will generate, and the threat to present wage standards if Congress fails to include prevailing wage provisions. Of the bills before Congress, two have been singled out for endorsement:

The Fallon highway bill (H.R. 8836) which proposes a 40,000-mile

interstate highway system to be constructed over a period of 13 years at a cost of $27.5 billion, 90% to 95% of which would be financed by the federal government. Now in the House Public Works Committee, the bill contains no prevailing wage clause. The unions are asking for one on the interstate phase only.

The Kelley school bill (H.R. 7535) calling for a four-year school construction program costing $3.2 billion with the federal government matching state expenditures. Now bogged down on the segregation issue in the House Rules Committee, the bill does contain a prevailing wage clause which the unions hope to retain.

It's estimated that the highway proposal—described as the biggest public works proposal in history—would create 151,000 new construction jobs a year. Those which would result from the school program—57,000.

The unions are asking for the prevailing wage provision to protect—not to raise—existing wage scales. Their argument is that ever since passage of the Republican sponsored Davis-Bacon Act 25 years ago, our public policy has frowned on use of the government's purchasing power to undercut prevailing wage rates. Over the years, the principle has been extended on eight occasions to various forms of federally-assisted construction, such as those embraced in the Federal Airport, and Hospital Survey and Construction Acts. The unions feel the principle should logically be extended to the big highway and school construction programs.

At the same time, the building trades are asking for a major overhaul of the Davis-Bacon Act to bring the law up to date. They are endorsing two bills—S. 1285 and H.R. 4566—which are aimed at four objectives:

• Extension of coverage to all federally-assisted construction, including such indirect forms as the insurance and guarantees contained in the VA and FHA programs. Despite the eight piecemeal extensions, the basic law still applies to direct federal construction only. The result is that even though one-third of all new construction is now financed to some degree by the federal government, only 11% is subject to prevailing wage requirements.

• Inclusion of fringe benefits in the determination of prevailing wages. To the disadvantage of many contractors who have participated in the great growth of fringe benefits—such as health and welfare, retirement and vacation pay—wage determinations are still based on basic rates only.

• Recognition of prevailing practices as to hours of work and overtime pay. Under this proposal, not less than time-and-a-half would be paid for hours in excess of eight a day, hours in excess of 40 a week, work in excess of five consecutive days, and work on Saturdays and Sundays and legal holidays. It's aimed at putting contractors on an equal bidding basis and at the protection of prevailing conditions of employment.

• More effective administration through centralization of the powers of investigation and enforcement in the Secretary of Labor. They're now scattered among 50 or more agencies.

• Also closely related to the public welfare is the interest of the building trades in housing. They say that at least 2,000,000 new units a year are necessary if the nation is to keep abreast of its growing population and the deterioration of its present buildings. Another side of the coin is the natural interest in additional jobs created by a high level of home construction—which reached 40% of all construction put in place last year.

To accomplish their goals, the building trades have endorsed the complex Lehman Bill (S. 3158), which is a 60-page omnibus housing bill aimed at the construction of 2,000,000 housing units a year—plus stepped-up activity in the fields of slum clearance and rehabilitation.

• **Taft-Hartley**—Most important of all the legislative goals is achievement of some relief from what Gray calls the "impossible situation" created by the Taft-Hartley Act which has never been dove-tailed with the traditional pattern of construction employment.

Among the bills introduced earlier this month: H.R. 4565 and S. 1269.

The bills are aimed at four main objectives:

1. Legalization of prehire contracts, which would require union membership after the seventh day of employment. Nondiscriminatory referral practices and the setting of minimum training, apprenticeship and experience qualifications would also be permitted. In support of the proposal, the building trades point to the fact that only one-half of one percent of the 3,500,000 construction workers—in an **industry that accounts for 14% of the** national income—are covered by certification elections. While in effect denied the right of representation because of the very nature of the construction industry, construction workers are nevertheless subject to all the restrictions and limitations imposed by the law.

2. Change the secondary boycott provisions to legalize boycott activity by construction workers when both the primary and secondary employer are working at a common construction site. If this change were made, the unions say, union workers would no longer be forced to work side by side on a project with nonunion men.

3. Eliminate the provision that requires issuance of a mandatory injunction before a case is heard on its merits. The provision now applies to employes only. Unions that have felt it most are those in the building trades. Two-thirds of all mandatory injunctions issued in fiscal 1954, for instance, were against these unions.

4. Repeal of Section 14 (b), which permits states to enact right-to-work or compulsory open-shop laws. Such laws are now on the books of 18 states. This is the most crucial issue of all because it goes to the heart of union security. Neither the prehire nor secondary boycott proposals could be generally effective unless Section 14 (b) were repealed. If repealed, union shop contracts would undoubtedly be permissible only where interstate commerce is affected—for that is the Constitutional clause on which rests the Congressional authority to legislate in the labor field.

In pressing for the Taft-Hartley changes, the building trades are aware—as they are with the rest of their goals—that they must appeal to Congress on the basis of the public welfare as well as their own interests. On this score, their appeal covers a number of points, including the favorable effect which a healthier and more stable construction industry would have on the national economy as a whole.

• **A continuing process**—When the conference ended on Thursday, the work of the delegates was far from over. Under the conference plan, those who attended the session are now back home instructing the rank-and-file on what the legislative program is and what it means to union construction workers. Local members will be urged in turn to continue sending the "grass-roots" story to Congress.

In the long run the unions' strongest card is the one they put in the ballot box. When he addressed the delegates on Thursday, AFL-CIO President Meany cautioned them to be realistic. "We must use the power of the AFL-CIO," he said, "to get men on Capitol Hill who understand the ideals of the American labor movement and who believe that the welfare of the country is tied to the welfare of its workers."

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We've never owned an engine with Ford's ability to dig in and hang on in tough going. On our present job we're breezing right through 18 inches of frozen ground, and doing so with no noticeable increase in operating costs."

—MR. ORVILLE SNEDEGAR
Newcastle Excavating Co.
Newcastle, Indiana

Mr. Snedegar operates a model 510 Unit Challenger, manufactured by the Unit Crane and Shovel Corp., Milwaukee, Wisconsin. Powered by a Ford "172" Heavy Duty Industrial Engine, the Challenger—as a clamshell, hoe or dragline—makes short work of *any* excavation job.

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FORD Division of FORD MOTOR COMPANY P.O. BOX 598, DEARBORN, MICHIGAN

OFFICIAL PROPOSALS

Bids: April 3, 1956

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR THE
REHABILITATION OF THE
MASSENA-TAYLORVILLE
TRANSMISSION LINE, NEW YORK
SPECIFICATION NO. PA-5-14033
ST. LAWRENCE CONTRACT NO. M3

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the Rehabilitation of the Massena-Taylorville Transmission Line, New York, in the following ways:

(1) If Brought in person on the day of receiving bids, until 10:30 A.M. Eastern Standard Time on the 3rd day of April 1956, 270 Broadway, Hearing Room C on the 6th floor, New York, New York.

(2) If mailed in, until 10:15 A.M. Eastern Standard Time on the 3rd day of April 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for furnishing the equipment and services and performing the work in accordance with the bidding schedule. Completion of the work will be required on or before July 1, 1957.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of ten ($10.00) dollars per initial set of contract documents and five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any and all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-14033

Bids: April 11, 1956

City of Knoxville, Tennessee

NOTICE TO BIDDERS

SEALED PROPOSALS, invited by the City of Knoxville, will be received by the Director of Public Service in the City Council Chamber, City Hall Park, Knoxville, Tennessee, until 10:00 A.M. E.S.T. April 11, 1956, at which time they will be opened and publicly read aloud. And the contract awarded as soon thereafter as practicable for the construction of the Riverfront-Willow Avenue Redevelopment Project, Division "A", flood control works and sanitary sewer readjustments.

The following unit quantities are involved in the flood control works: 19000 cu. yds. of earth excavation, 31600 cu. yds. of rock excavation, 643,000 sta. yds. of surplus disposal, 3500 cu. yds. of compacted embankment, 3240 cu. yds. of pervious fill, 6975 cu. yds. of Class "A" structural concrete, 1585 cu. yds. of Class "B" structural concrete, 200 cu. yds. of Class "C" structural concrete, 2,240,000 lbs. of concrete reinforcing steel, 26,200 lbs. of welded wire fabric and 5150 lineal feet of 6" perforated drain pipe.

The following unit quantities are involved in the sanitary sewer readjustments: 2350 lineal feet of 18" pipe, 367 lineal feet of 27" pipe, 12 sewer manholes, 4050 cu. yds. of rock excavation and one sewer crossing under channel.

Four hundred and fifty calendar days will be allowed for this construction.

The Instructions to Bidders, proposal, specifications and plans may be examined at the office of the City Engineer, City Hall, Knoxville, Tennessee. Copies of these contract documents may be obtained upon the deposit of twenty-five dollars ($25.00) for any set. Any bidder, upon returning such set promptly and in good condition, will be refunded his deposit, and any non-bidder, upon so returning such set, will be refunded one-half of his deposit.

Each proposal must be accompanied by a satisfactory cashiers or certified check or bid bond, made payable to the City of Knoxville, in the amount of five per cent (5%) of the total bid, as assurance that the bid is made in good faith.

All bidders must be licensed contractors, as required by Chapter 135 of the Public Acts of 1945, as subsequently amended by the General Assembly of the State of Tennessee.

Attention is called to Section 9 of the Rules and Bylaws adopted April 27, 1945 by the State Board of Licensing General Contractors, Nashville, Tennessee, which reads in part as follows:

"The architect or engineer shall direct that the number and date of license appear on the envelope containing the bid, otherwise the bid will not be opened."

The City of Knoxville reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interest of the City, after all bids have been examined and canvassed.

CITY OF KNOXVILLE
(Signed) R. I. Gentry
Director of Public Service

Date: February 24, 1956

Knoxville, Tennessee

Bids: March 27, 1956

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF
LOAD CENTER UNIT SUBSTATIONS
AND APPURTENANCES
SPECIFICATIONS NO. PA-5-14008
ST. LAWRENCE CONTRACT NO. P36

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture and furnishing of seventeen (17) load center unit substations and delivery thereof f. o. b. destinations, in the following ways:

(1) If brought in person on the day of receiving bids, until 10:30 A.M., Eastern Standard Time on the 27th day of March, 1956, Hearing Room C on the 6th floor, 270 Broadway, New York, New York.

(2) If mailed in, until 10:30 A.M. Eastern Standard Time on the 27th day of March, 1956 at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above. Bids will be entertained for the seventeen (17) load center unit substations and associated equipment and services in accordance with the bidding schedule. Erection at the site of installation will be done by Others but services of an erecting engineer shall be provided by the manufacturer if and when required. Delivery of the equipment will be required starting June 1, 1956.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-14008

Bids: April 19, 1956

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF
TUNNEL DIVERSION GATES
FOR
LONG SAULT DAM
SPECIFICATIONS NO. PA-5-15079
ST. LAWRENCE CONTRACT NO. P35

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the manufacture and furnishing of thirty-four (34) Tunnel Diversion Gates for Long Sault Dam and delivery thereof f.o.b. destination in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A.M. Eastern Standard Time on the 19th day of April, 1956, 270 Broadway, Hearing Room C on the sixth floor, New York 7, New York.

(2) If mailed in, until 10:15 A.M. Eastern Standard Time, on the 19th day of April, 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for thirty-four gates having a total weight of approximately 1500 tons.

Bids will not be restricted to American manufacturers.

Plans, specifications and proposal forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Twenty ($20.00) dollars per initial set of contract documents and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the gross sum bid in the bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-15079

Bids: April 5, 1956

Proposal No. 772

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
FOUR POWER DISTRIBUTION
TRANSFORMERS

Sealed proposals for furnishing and delivering of four power distribution transformers for New York International Airport will be received at the office of the Director of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, until 11 A.M., Thursday, April 5, 1956, at which time and place proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase and Administrative Services.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

OFFICIAL PROPOSALS

Bids: March 22, 1956

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on March 22, 1956 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON ROUTE 17 EXPRESSWAY—TWADELL BROOK TO TYLERS SWITCH, TOWNSHIP OF HANCOCK—DELAWARE COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-83

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.

(b) Mr. F. J. Weber, Acting District Engineer, 71 Frederick Street, Binghamton, New York.

(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $36,100.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,810.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. W. JOHNSON
SUPERINTENDENT OF
PUBLIC WORKS

Bids: April 3, 1956

Proposal No. 773

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
TWO SETS OF PRIMARY SWITCHGEAR
NEW YORK INTERNATIONAL AIRPORT

Sealed proposals for furnishing and delivering of two sets of primary switchgear for New York International Airport will be received at the office of the Director of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, until 11 A.M., Tuesday, April 3, 1956, at which time and place proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase and Administrative Services.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

Bids: April 2, 1956

Palm Beach County, Florida

SAND TRANSFER FACILITIES AT LAKE WORTH INLET,
PALM BEACH COUNTY, FLORIDA

Sealed bids will be received by the Board of County Commissioners, Palm Beach County, Florida, at the Clerk's office, up to and opened at 11:00 o'clock A.M., E.S.T. April 2, 1956, for construction of the following project:

SAND TRANSFER FACILITIES AT LAKE WORTH INLET
PALM BEACH COUNTY, FLORIDA

Drawings and Specifications may be obtained by qualified contractors at the office of the County Engineer, 810 Datura Street, West Palm Beach, Florida or at the offices of Tippetts-Abbett-McCarthy-Stratton, Consulting Engineers, 62 West 47th Street, New York, New York, upon payment of $25.00 for each set; said payment will be refunded to those contractors who submit bids and who return the set in good condition to place of purchase within five days after date for receipt of bids.

The work includes the following principal features:

(1) Pumping station consisting of a permanent type dredge pump installation in a reinforced concrete building designed to withstand storm conditions and to harmonize with the surrounding area.

(2) Two submarine pipe lines across Lake Worth Inlet to carry dredged material to depleted area south of the Inlet.

(3) Flushing equipment to prevent plugging or stoppage in submarine lines.

(4) A groin of concrete capped steel sheet piles to delineate the limits of the pumping area and to protect the public.

A Proposal Guaranty in the amount of 5 per cent of the gross bid will be required as a guarantee that the bidder, if awarded the contract, will within 10 consecutive calendar days after written notice is given of such award, enter into a written contract with the Board of County Commissioners in accordance with the accepted bid, and give a Contract Surety Bond satisfactory to the Board of County Commissioners equal to 100 per cent of the Contract price.

The right is reserved to reject any or all bids.

No bidder may withdraw his bid within 10 days after the date set for opening bids.

By order of the Board of County Commissioners.

PALM BEACH COUNTY, FLORIDA
PAUL RARDIN, Chairman
STEPHEN R. MIDDLETON,
County Engineer

Bids: April 17, 1956

Contract PN-300.004

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS NOS. 178, 179, 180, 181, 182 AND WHARF

Sealed proposals for the construction of Buildings Nos. 178, 179, 180, 181, 182 and wharf at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, April 17, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $100.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $100.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 15, 1956

Bids: March 27, 1956

Contract NA-380.001

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
HANGAR NO. 14—SURCHARGE FILL

Sealed proposals for the installation of surcharge fill for Hangar No. 14 at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, March 27, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 15, 1956

Bids: March 27, 1956

Proposal No. 770

THE PORT OF NEW YORK AUTHORITY
JULIETTE STREET PLAYGROUND
BAYONNE, NEW JERSEY

Sealed proposals for the construction of Juliette Street Playground, Bayonne, New Jersey, will be received at the office of the Director of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, until 11 A.M., Tuesday, March 27, 1956, at which time and place proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase and Administrative Services.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

U. S. Government

IRAQ GOVERNMENT — DEVELOPMENT BOARD DOKAN DAM — CONTRACT No. 1. Sub-Contract for Electrical & Mechanical Equipment. 1. Acting on behalf of the Development Board of the Government of Iraq, Tenders are invited by Group Dumez-Ballot of Baghdad for a Sub-Contract for the Supply and Installation at Dokan Dam, on the Lesser Zab River, Iraq, of electrical and mechanical equipment including the following: a) Diesel-electric generating plant of approximately 1350 Kilowatts capacity. b) 6.6 Kilovolt ring main distribution system approximately 3500 metres in length, complete with sub-station equipment. c) Electrically operated lift installation. d) Street and dam crest lighting installation. e) Miscellaneous cable and minor electrical and mechanical installations. 2. The successful tenderer will be required to enter into a contract with the Main Contractors at an early date, rapid delivery of the equipment being essential. 3. Sub-Contract Documents including the Contract Documents for the Main Civil Engineering Contract and drawings may be inspected at any of the following places, namely:—a)—The offices of the Development Board, Baghdad. b)—The Iraqi Embassy, London. c)—The Iraqi Embassy, Washington. d)—The Royal Iraqi Legation, Paris. e)—The Royal Iraqi Legation, Brussels. f)—The Royal Iraqi Legation, Rome. g)—The Head Office of Messrs. Binnie, Deacon & Gourley, (Consulting Engineers) Artillery House, Artillery Row—London, S.W.1. h)—The Head office of Societe Dumez, 33, rue Henri Rochefort, Paris, 17e, France. 4. Firms desiring to tender may obtain copies of the Sub-Contract Documents and drawings together with the relative sections of the Contract Documents for the main civil engineering works from Societe Dumez of Paris upon payment of 20,000 Francs. 5. Tenders must be written in English and six copies must be submitted to Group Dumez-Ballot, Baghdad, c/o Societe Dumez in Paris, and will be received up to noon 15th June 1956. A further two copies are to be posted to Messrs. Binnie Deacon & Gourley's London office, to reach them the day following. 6. Tenders must be accompanied by full particulars of the tenderer's facilities for undertaking the work and experience of executing work of a similar character and magnitude. Group Dumez-Ballot, Baghdad, c/o Societe Dumez, 33, rue Henri Rochefort, Paris, 17e — France.

5

Department of Commerce, Bureau of Public Roads, March 1, 1956. SEALED BIDS will be received at the office of the Bureau of Public Roads, Gatlinburg, Tennessee, until 1:30 p.m., E.S.T., MARCH 30, 1956, for Project 247, Blue Ridge Parkway, Jackson County, North Carolina. Construction of Tunnel Linings, Tunnel Extensions, Stone Masonry Portals, and other work. Length 0.171 mile. The approximate quantities of the more important items are as follows: 356 lin. ft. Concrete Tunnel Lining, 2,365 cu. yd. additional Concrete for Lining over Timber Tunnel Inner Lining, Extensions and Portals, 160,000 Lb. Reinforcing Steel and 570 cu. yd. Stone Masonry. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the office of the Division Engineer, 1440 Columbia Pike, Arlington, Virginia, or at the address given above. H. J. Spelman, Division Engineer.

OFFICIAL PROPOSALS

Bids: April 10, 1956

Arlington County, Virginia

ADVERTISEMENT FOR BIDS
FURNISHING AND ERECTING
ELEVATED STEEL WATER STORAGE
TANK, 500,000 GALLON CAPACITY

Sealed proposals for furnishing all material and equipment and doing all work required for the furnishing and erecting of an elevated steel water storage tank, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A.M., Eastern Standard Time, on April 10, 1956, and there publicly opened and read immediately thereafter.

CONTRACT 5.

FURNISHING AND ERECTING ELEVATED STEEL WATER STORAGE TANK 500,000 GALLON CAPACITY

1. Location: The work in located in Arlington County, Virginia, on County owner property at N. Wakefield Street and 24th Street N.

2. Type of work: The principal items of work include the following:—

Furnishing and erecting a 500,000 gallon elevated steel water storage tank complete with all accessories, including obstruction lighting and cathodic protection.

3. Copies of Plans and Specifications, Information for Bidders, Bid Forms and other bidding and contract documents may be examined at the office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street, N.W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH ST., NEW YORK (7), N. Y.

4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of TEN ($10.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: H. G. Bonney
Purchasing Agent

Bids: April 11, 1956

Knoxville Housing Authority

INVITATION FOR BIDS

The KNOXVILLE HOUSING AUTHORITY, INC. will receive Bids for the VINE AVENUE BRIDGE, until 2:00 P. M., Eastern Standard Time on the 11th day of April, 1956, at 1701 Jourolmon Avenue, Knoxville 17, Tennessee at which time and place all Bids will be publicly opened and read aloud.

Bids are invited upon the several items and quantities of work as follows:

ITEM	
Structural excavation (earth)	800 cu. yds.
Structural excavation (rock)	60 cu. yds.
Class B structural concrete in base slabs of abutments complete in place as specified	130 cu. yds.
Class B structural concrete in abutment walls complete in place as specified	90 cu. yds.
Class B structural concrete in bridge deck, sidewalk and concrete portion of handrail complete in place as specified	50 cu. yds.
Concrete reinforcing steel complete in place as specified	21,500 pounds
Structural steel complete in place as specified	15,000 pounds
Pipe handrail complete in place as specified	74 lin. ft.

Contract Documents, Drawings and Technical Specifications are on file at the office of KNOXVILLE HOUSING AUTHORITY, INC. at 1701 Jourolmon Avenue, Knoxville 17, Tennessee; at the office of A. E. Rost, Consulting Engineer at 408 West Clinch Avenue, Knoxville, Tennessee; and at the Knoxville Builders Exchange, 532 Central Avenue, N., Knoxville, Tennessee.

Copies of the Contract Documents may be obtained by depositing $100.00 with the KNOXVILLE HOUSING AUTHORITY, INC. for each set of documents so obtained. Each such deposit will be refunded if the Drawings and Contract Documents are returned in good condition within 10 days after date of Bid opening.

A certified check or bank draft, payable to the order of the KNOXVILLE HOUSING AUTHORITY, INC., negotiable U. S. Government Bonds (at par value), or a satisfactory Bid Bond executed by the Bidder and an acceptable surety, in an amount equal to five percent (5%) of the total of Bid for VINE AVENUE BRIDGE shall be submitted with each Bid.

Attention is called to the fact that not less than the minimum salaries and wages as set forth in the Contract Documents must be paid on this project.

The KNOXVILLE HOUSING AUTHORITY, INC. reserves the right to reject any or all Bids or to waive any informalities in the bidding.

Bids may be held by the KNOXVILLE HOUSING AUTHORITY, INC. for a period not to exceed thirty (30) days from the date of the opening of Bids for the purpose of reviewing the Bids and investigating the qualifications of Bidders, prior to awarding of the Contract.

KNOXVILLE HOUSING
AUTHORITY, INC.
By R. Rex Wallace
Title Executive Director

Date March 1, 1956

Prequalification Date: March 23, 1956

Board of Education
Bureau of Construction

Notice Re Prequalification Forms for Contractors

NOTICE IS HEREBY GIVEN THAT THE Director of the Bureau of Construction, 4th Floor, 42-15 Crescent Street, Long Island City 1, New York, will receive applications for prequalification of bidders, from contractors who may wish to submit bids for the proposed hereinafter specified contracts, as follows:

For general construction, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for a new Junior H.S. 117, Manhattan, East 109th St., and 2nd Avenue, and new P.S. 175, Manhattan, West 135th St. and 7th Avenue.

Prequalification application forms will have to be secured from and must be submitted to the Director, Bureau of Construction Office, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City, New York.

Bids when advertised will be received from prequalified bidders only.

The time for submitting prequalification application forms for the above contracts will expire on Friday, March 23, 1956.

WILLIAM H. CORREALE
Director
Dated: March 6, 1956.

Bids: April 3, 1956
April 6, 1956

City of Chicago

BIDS ARE INVITED FOR CALUMET SKYWAY TOLL BRIDGE PROJECT

The first bids will be received by the City of Chicago on April 3, 1956 for parts of the $88,000,000.00 project which will consist of approximately 43 separate contracts and sections embracing such work as a bridge, substructures, retaining walls, structural steel superstructures, concrete decks and bituminous surfacing, sewers and pumping station, and roadway lighting for the toll road project starting at the Illinois-Indiana state line running approximately seven miles to the vicinity of 63rd Street and South State Street in the City of Chicago.

On April 3, 1956, bids will be received for Design Section 7-D-1 for furnishing and fabricating approximately 15,400,000 pounds of structural steel; Design Section 7-D-2 for erecting approximately 15,400,000 pounds of fabricated structural steel; and Design 7-D-3 for complete decks and bituminous surfacing involving approximately 4,200 gallons of bituminous material, 4,200 tons of bituminous concrete material, 12,200 cubic yards of concrete, 2,470,000 pounds reinforcing steel, 12,300 feet of metal handrail, 600 feet of wrought iron pipe and other miscellaneous items.

On April 6, 1956 bids will be received on Design Section 7-E-1 for furnishing and fabricating steel for superstructures, Design Section 7-E-2 for the erection of steel superstructures and Design Section 7-E-3 for complete decks and bituminous surfacing of construction similar to Section 7D.

Complete specifications, contract documents and bidding forms may be received after depositing seventy-five dollars ($75.00) for each set in cash or certified check made payable to the City of Chicago, when forwarded to the Department of Purchases, Contracts and Supplies, Room 100, City Hall, Chicago 2, Illinois. Plans and specifications will be shipped by express and to expedite receipt of documents it is suggested that your Chicago representative pick up documents at the City Hall.

All bidders who are interested in the above work are requested to file a request to be put on notice when the various projects are released for bidding. The City will then mail to all interested parties a copy of the legal advertisement which gives brief description of the work involved and bid-deposits required.

Direct all correspondence and inquiries to John F. Ward, Purchasing Agent, Department of Purchases, Contracts and Supplies, Room 100 City Hall, Chicago 2, Illinois.

John F. Ward
Purchasing Agent
City of Chicago

Bids: April 10, 1956

Contract NA-340.002

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
TAXIWAY "B" HARDSTAND
AND
AIRCRAFT PARKING AREAS

Sealed proposals for construction of a taxiway, hardstand and aircraft parking areas and the furnishing and installation of utilities therefor at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 10, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 14, 1956

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

U. S. Government

GOVERNMENT OF IRAQ. DEVELOPMENT BOARD AND MINISTRY OF DEVELOPMENT, BAGHDAD. ELECTRIFICATION OF NORTHERN AND CENTRAL IRAQ. SUBSTATION EQUIPMENT. CONTRACT No. 3. POWER TRANSFORMERS AND ACCESSORIES. The Development Board and Ministry of Development of the Government of Iraq invite Tenders from qualified firms for the supply and delivery, erection and supervision of operation of 34 Power Transformers ranging from 150 kVA to 25 MVA for the Substations of Dibis, Erbil, Mosul, Hammam al Alil, Kirkuk, Sulaimaniyah, Sarchinar in Northern Iraq and Baghdad in Central Iraq. Civil Engineering work is excluded. Tender Documents may be inspected on and after March 19th, 1956, until April 30th, 1956, at the following addresses:— (1) Directorate General of Legal Affairs and Contracts, Ministry of Development, Development Board, Baghdad. (2) Embassies of Iraq, in Washington, London and Paris. (3) Royal Legations of Iraq in Bonn, Brussels and Rome. (4) Honorary Consulate of Iraq in Stockholm, and Egyptian Legations in Bern and The Hague. (5) On appointment, at the Office of the Consulting Engineers, Messrs. Traction et Electricite-Electrobel, 1, Place du Trone, Brussels. Firms desiring to tender may obtain four copies of the documents each copy consisting of three volumes, on and after the March 19th 1956 until April 30th 1956, from either the Directorate General of Legal Affairs and Contracts at the Development Board Offices, Baghdad, Iraq, or Messrs. Traction et Electricite-Electrobel, 1, Place du Trone, Brussels, Belgium, or the above-mentioned Embassies and Legations on payment of twenty Iraqi Dinars, or the equivalent. This sum will not be returned to the tenderers. All tender documents are to be submitted in English, and they must be accompanied by a deposit of ID. 10,000 (Ten Thousand Iraqi Dinars), which must be paid in cash to the Directorate General of Accounts of the Ministry of Development, and the receipt issued for such payment must be attached to the Tender Documents. Such cash deposit may be replaced by a letter of guarantee from or through an approved bank in Iraq. Tenders must be submitted in a sealed envelope endorsed clearly on the outside "Northern and Central Iraq Electrical Systems-Substation Equipment-Power Transformers and Accessories". They must be delivered to the Ministry of Development on or before 12 noon local time on the May 28th, 1956. If sent by post the tenders shall be registered, but tenderers must assure themselves of delivery to the Board in due time. A letter of capacity, method of procedure, articles of association, are to be submitted with the tender at the same time. Tenders not submitted within the time specified or not accompanied by a receipt of the deposit or a letter of guarantee will not be taken into consideration. The attention of the tenderers is drawn to the fact that early completion of the project is desired, and therefore an early completion date will be considered an important factor in the selection of the successful tenderer. The Development Board does not bind itself to accept the lowest or any tender. Minister of Development.

United States Department of Commerce, Bureau of Public Roads, March 15, 1956. SEALED BIDS will be received at the office of the Inter-American Highway Office, Bureau of Public Roads, Room 4009, General Services Building, Washington 25, D. C., until 2:00 p.m., e.s.t., April 12, 1956, for construction of Rama Road Project R-3A (Revised) in the Republic of Nicaragua. The project begins at Muhan about 23 miles east of Santo Tomas and extends easterly toward Rama for approximately 15 miles. Bidders will be limited to United States or Nicaragua firms with a satisfactory record of performance on highway construction in the United States of America or in the Republic of Nicaragua. The approximate quantities of the major items of work are: 57 Hectares Clearing and Grubbing 707,000 cubic meters Unclassified Excavation, 50,000 cubic meters Selected Borrow Base, 660 cubic yards Class "A" Concrete, 80,000 lbs. Reinforcing Steel, and 8,000 linear feet Nestable Bituminous Coated Corrugated Metal Culvert Pipe (from 24" to 72"). Special conditions of work performed by U. S. Government in foreign areas apply as well as local laws. Plans, Specifications and Proposal Forms are available upon request at the address given above, or at the Inter-American Highway District Office, Bureau of Public Roads, 516 Avenida Roosevelt, Managua, Nicaragua. C. D. Curtiss, Commissioner.

U. S. Government

Department of Commerce, Bureau of Public Roads, March 5, 1956. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m. C.S.T., MARCH 30, 1956, for the construction of Project 3E1, Part B, Natchez Trace Parkway, Chickasaw County, Mississippi, 6.121 miles Grading, Draining, Structures, Gravel Base Course, and other work from about 1.3 miles south of Mississippi Highway 41 to Mississippi Highway 32. The approximate quantities of the more important items are as follows: 426,500 cu. yd. Excavation and Borrow, 28,000 cu. yd. Gravel, 1,700 cu. yd. Concrete, and 3,500 units of Seeding. Minimum wage rates have been fixed as required by law. Plans, Specifications and Proposal Forms are available upon request at the address given above, or Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia. H. J. Spelman, Division Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4656) will be received at Ephrata, Washington, until April 24, 1956, for furnishing labor and materials for Earthwork and Structures, Evergreen Pumping Plant Intake Channel and Discharge Lines, Lateral W14 and Dike W14, Block 77, West Canal Laterals, Columbia Basin Project, Washington. Location near Quincy, Washington. Principal items are 154,000 cu. yds. excavation; 16,000 cu. yds. rockfill on dike; 400 cu. yds. concrete in structures; 18,400 lin. ft. concrete pipe; two steel surge tanks; and other work. Completion time 320 days. For particulars, address Bureau of Reclamation, P. O. Box 368, Ephrata, Washington; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4656) will be received at Weaverville, California, until April 4, 1956, for furnishing labor and materials for Trinity Dam Diversion Tunnel, Central Valley Project, California. Location near Lewiston, California. Principal items are 83,000 cu. yds. excavation, common; 37,000 cu. yds. excavation, rock; 80,000 cu. yds. excavation, all classes in tunnel; 1,000,000 pounds furnishing and placing permanent structural steel tunnel supports; 2,000 lin. ft. furnishing and installing tunnel roof support bolts; and other work. Completion time 300 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

EMPLOYMENT OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Gunite Superintendent and Nozzleman wanted immediately. Steady work. State age, experience, availability, salary desired. Vicinity Washington, D. C. P-9145, Engineering News-Record.

Wanted: Experienced building construction estimator for general contractor located in Southern Connecticut. Excellent opportunity for qualified person. P-9185, Engineering News-Record.

Wanted for immediate employment. Architects and owners field representative for large monumental building being constructed in Buffalo, New York. Applicant is required to have experience in general construction, plumbing, heating, ventilating, air conditioning and electrical work for the purpose of interpreting plans and specifications, inspection and coordination of such work. Please state qualifications, references, experience and salary wanted. P-9519, Engineering News-Record.

Engineers experienced in water and sewage works projects or related fields. Opportunity for permanent connection with long established consulting firm. Please state full qualifications, experience, references and salary requirements. Location Ohio. P-9518, Engineering News-Record.

Construction Superintendent—Experienced in concrete building construction. Work in New York State. Must be able to assume complete responsibility. Engineering background preferred. Start immediately. P-9552, Engineering News-Record.

Construction Superintendent. Heavy, marine and industrial. Southeastern states. Must be capable of organizing and scheduling operations and cost conscious. Submit pertinent information as to education, age, and experience and furnish references. Indicate present or last salary. P-9559, Engineering News-Record.

Asphalt paving foreman, young, able to assume responsibilities. Salary based on experience, highway department background helpful. Northern New Jersey. P-9292, Engineering News-Record.

Engineers experienced in design and supervision of construction to work as resident engineers or prepare plans for water and sewer systems. State experience, age, salary required, when can report, and give references. Reply P-9290, Engineering News-Record.

Engineering graduates with experience in the testing and control of placement of soils, concrete and asphalt mixtures for work immediately abroad and in New England for an engineering organization of sixty years in business. Give full details of experience and education. Salary range $5,000 to $10,000 per year. P-9305, Engineering News-Record.

CIVIL ENGINEER—SENIOR—JUNIOR

College graduates—by established Public Utility supervisory consulting organization. SENIOR—*minimum 7 years experience*—JUNIOR—*minimum 3 years, for work in connection with design hydro systems, also structural and foundations for steam, hydro, and Diesel Plants.* Location New York—*some travel future.* Reply stating age, education, experience, personal particulars and minimum salary expected.

AMERICAN & FOREIGN POWER CO. INC. and SUBSIDIARIES
2 Rector Street, New York 6, New York
21st Floor DI 4-4400—Ext 8494

POSITIONS VACANT

Wanted: Experienced highway and structural engineers for work on expressway design with N. Y. C. consulting engineers. P-9185, Engineering News-Record.

City Engineer's Assistant—For general municipal engineering and administration, salary dependent upon qualifications, state experiences and apply to Service Director, City Building, Mansfield, Ohio.

Wanted: Bridge & Highway designers with office and field experience by consulting engineering firm in Pennsylvania. Give complete details and salary desired. P-8381, Engineering News-Record.

Wanted: Engineer with at least five years' experience in sewage water line construction, with some supervisors background. Opportunity for permanent connection with long established contracting firm. Please state qualifications, references, experience and salary wanted. Write to La Fera Contracting Co., 149 Verona Avenue, Newark 4, New Jersey, or phone HUmboldt 3-8541 between 10 A.M. and Noon.

Civil Engineers, Designers, Draftsmen experienced in the design of sewers, pumping stations, sewage treatment plants, water supply systems, structural and hydraulic design, hydraulic computations, specs. O'Brien & Gere, 400 E. Genesee St., Syracuse, N. Y.

Designers & Draftsmen—structural, mechanical & electrical. For work on industrial buildings & power plants. Long range program, top salaries, advancement & vacations. Marbarry Corp., 140 Nassau St., N.Y.C. COrtlandt 7-6322.

Wanted: Highway and structural draftsmen for work on expressways with N.Y.C. consulting engineers. Recent graduates considered. P-9185, Engineering News-Record.

Apprentice Trainees for construction analyses and appraisals. Recent graduates, non-smokers, male or female. Apply or send resume and references to Construction Survey Co., 101 Park Avenue, N. Y. 17.

(Continued on following page)

WANTED for EXPRESSWAY PROJECT

Highway Field Engineers
Party Chiefs
Instrument Men
Materials Inspectors

Apply

L. D. STEPHENSON
Resident Engineer
Frankland and Lienhard
39 Klas Avenue
Buffalo 24, New York

SURVEYORS
(TOPOGRAPHIC)

Challenging opportunities for Party Chiefs and Instrumentmen experienced in map survey control. Experience with aerial photographs and theodolites desirable. Permanent positions; considerable travel necessary. Forward detailed resume and salary desired.

AERO SERVICE CORPORATION
Photogrammetric Engineers
210 E. Courtland St. Phila. 20, Pa.

CITY OF WICHITA
CIVIL ENGINEERS

Various levels of positions open, including: Chief of Survey Party, Drafting, Designing, and supervising the construction program, or plans and surveys. Salary Range $368 to $450, and $485 to $590. Permanent positions. Retirement plan, Social Security. Paid vacation, Sick leave, and opportunity for advancement.

Apply
PERSONNEL DIRECTOR
239 S. Water Wichita 2, Kansas

ENGINEER, LAND SURVEYOR OFFICE

Exp. in land development work. Computations for coordinates boundry lines, streets and lots. Drafting exp. to complete sub-division maps for filing. Salary $125 to $150. Perth Amboy area, steady, send resume.

P-1055—Engineering News-Record
330 W. 42 St. New York 36, N. Y.

ENGINEERS
HIGHWAYS AND BRIDGES
Designers
Draftsmen
OPENINGS At
Rochester, Penna., Harrisburg, Penna., College Park, Md.

ARCHITECTS
Architectural Draftsmen
OPENINGS At
Rochester, Penna.

Send Resume Including Education, Experience, Salary Requirements and Availability TO:

Richard L. Shaw, Personnel Director

Michael Baker, Jr., Inc.
Consulting Engineers
Baker Building Rochester, Penna.

POSITIONS VACANT
(Continued from preceding page)

Wanted—Building superintendents, estimators carpenter superintendents & general foreman. Excellent opportunities and starting salary. J. L. Simmons Company, Inc., 506 South Wabash Avenue, Chicago 5, Illinois. Webster 9-2355.

Civil Engineer—$5,178 to $6,326 yearly. In Hydrology Division of Water Resources Commission. Completes field studies concerning water use and water conditions on a statewide, river basin, regional or local basis, such studies to include the gathering and tabulation of hydrologic data from all sources. Analysis of such data for preparation of flood and drought frequencies, back water curves, flow-duration curves, mass diagrams, and other related hydrologic studies. Makes field investigations of problems dealing with beach erosion, ground water pollution, floods, drainage and sedimentation. Write Michigan Civil Service, Lansing 13, Michigan.

Wanted Experienced Foreman for water and sewer contractor. Write experience, etc. or wire to S & S Construction Company, South Fallsburg, New York.

Project Engineers—Experienced senior and associate project engineers for design and development of special field machinery for the Sugar Cane Industry in Hawaii. Previous experience in the design and development of construction or agricultural machinery, important. P-1054, Engineering News-Record.

City Engineer Wanted for Winona, Minnesota (Population 30,000), must be a registered civil engineer. Letter of application should contain statement of experience, education, personal background and salary expected. Send application to the City Council, City Hall, Winona, Minnesota.

Wanted: Superintendent or assistant superintendent with carpenter background for work on small and medium sized schools, stores, public buildings, etc. Salary commensurate with ability. Position now open. P-9592, Engineering News-Record.

EMPLOYMENT SERVICE

Salaried personnel, $5,000-$30,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, P. O. Box 674, Manchester, Vermont.

EMPLOYMENT AGENCIES

Wanted Engineers, Designers, Draftsmen—Structural, Architectural, M.E., C.E., E.E. and Ind., also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

Chief Estimator, project manager, construction executive, available for association with active, competitive general contractor. Proven profitable record for 15 years. Salary bracket $15,000 per year. PW-8855, Engineering News-Record.

POSITIONS WANTED

Engineer age 37. Diversified experienced includes field engineering, cost estimating, chief engineer, construction superintendent. Familiar with power equipment. 5 years foreign service—resident engineer, branch manager. Available April. Prefers research & development work in the eastern States. PW-9169, Engineering News-Record.

Construction Engineer 25 years sound experience on heavy industrial, power, chemical, government projects. Organized and supervised administrative and field forces. Familiar all types contracts. Top man, want salary to match. Prefer Southwest. PW-9490, Engineering News-Record.

Treasurer Controller—Over twelve years senior administrant of consulting engineering and construction contracting acctg. high level experience includes financing, insurance, job costs, taxes & claims. Proficient in the preparation of concise reports. Prefer New York City area. PW-9410, Engineering News-Record.

Registered Sanitary engineer with several years diversified experience in water; sewage; industrial and nuclear wastes; industrial hygiene; air pollution; environmental surveys; wants to associate with small progressive engineering firm. PW-9507, Engineering News-Record.

Lt (jg), Civil Engineer Corps, USNR, age 26, available April, desires permanent position with contractor or consultant in middle Atlantic area initially as field engineer. Opportunity for advancement to executive, administrative position essential. PW-9551, Engineering News-Record.

Executive Civil Engineer, project manager, over 20 years field and office experience estimating, bid to completion, all types earthwork construction; dams, excavation, dredging. Thoroughly competent to assume full responsibility, domestic or foreign. Write PW-9518, Engineering News-Record.

Supt of Construction for either owner or architects or both. Now employed jointly by both on buildings. Seeking change of location to So. California. PW-9191, Engineering New-Record.

Supt. Extensive experience on rock & earth moving, heavy blasting, drilling, open cuts, shafts & quarry. PW-1051, Engineering News-Record.

Sewer Foreman 25 years experience, capable to handle the most difficult sewer lines, would like to contact progressive contractor for permanent position. PW-1033, Engineering News-Record.

Construction Executive, dynamic with plenty of drive. Cost estimator and project manager heavy construction. Can estimate price, and supervise the project PE 32, $10,000 year. PW-9588, Engineering News-Record.

Cost Estimator, heavy const., managerial capacity. Bridges, docks, R.R., highways, sewers. Experienced bid preparation to completion of project. P.E. 35 N.Y.C. & vicinity. PW-9585, Engineering News-Record.

Superintendent Building Construction: Industrial, Commercial, institutional, large scale housing, churches, etc., position desired with reliable organization as field Supt; over 25 yrs. exp. Age 54. PW-1041, Engineering News-Record.

Project and Construction Manager, 28 years experience. N.S.P.E., design and heavy construction, contractor estimator quantity and cost, surveyor, land development. Min. $8,000. Prefer Pa., Md. PW-1028, Engineering News-Record.

Construction Executive. Licensed Civil Engineer desires connection in charge of construction department of multi-plant organization. Handle job from design, estimating, contracting to completion. Thoroughly versed in pricing and economics of all types of construction. Some foreign experience, languages. PW-1020, Engineering News-Record.

Professional Engineer, M.ASCE, advanced degrees. Registered. Experience: engineering, construction, administration, highways, bridges, buildings, aggregate production, sanitary engineering, engineering teaching. PW-1042, Engineering News-Record.

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Civil Mechanical Electrical

Caterpillar Tractor Co., the world's leading manufacturer of diesel tractors, motor graders, engines and earthmoving equipment has openings for Engineers in both their Domestic and Export Sales Departments. Applicants for these responsible positions should have Engineering degrees or considerable practical experience. Civil, mechanical and electrical engineers are desired. Security, advancement and excellent working conditions are offered to qualified men.

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Address reply to

P-1048, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

State Education, experience, age, salary expected and references.

Due to our expansion program, the following permanent positions are available in a large pulp and paper manufacturing plant in the Upper Midwest:

Design and Construction Estimator
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The individuals being sought should be graduate engineers with a minimum of five to ten years experience who are well versed in their respective fields. Our employees know of these openings. Your confidential reply should include personal, educational and work history together with salary thinking. Write

P-9199, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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P-1010, Engineering News-Record
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State Office Building
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P-9529, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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P-9361, Engineering News-Record
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P-9121, Engineering News-Record
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W-1025, Engineering News-Record
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FS-9418, Engineering News-Record
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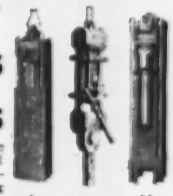

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Editorials

Reclamation Back in Business

THE END OF THE SLUMP FOR RECLAMATION ACTIVITIES was foretold in our March 1 issue in an analytical report by Vincent B. Smith of our Washington staff. Support for the prophecy came quickly, and in the March 8 issue we were able to report House action that will mean an early start of work totaling $756 million on the Upper Colorado River Project. Thus the Bureau of Reclamation is back in business after a deep postwar dip. Here is good news for construction, and good news for the nation as a whole.

But, as pointed out in Mr. Smith's article, the basic question of how far the bureau will go in its recovery from some pretty lean years will not be answered by big jobs alone. With four units of the Upper Colorado scheme now virtually assured, it remains to be seen what more Congress will do toward giving this federal agency the balanced program of large and lesser projects that it is capable of engineering. There was some $105 million worth of appropriations requested in the President's budget message for seven projects other than the big ones. Thus, several questions are posed: How far and how fast will be the bureau's comeback from its present rate of spending for construction of about $130 million per year? Will the Administration, as reported, impose a $200 million ceiling on annual appropriations? Or will the reclamationists see their $250 million ideal realized as a sustained average rate of spending?

The future, of course, holds the precise answers to these questions. But it is heartening to see apparent accord between the Republican Administration and the Democratic Congress on what is surely the basic issue here: That the water resources of the nation must be conserved. For just as surely as our agricultural and industrial future depend on full and prudent use of water, such use depends on a national water policy accepted by both parties. The report of the Presidential Advisory Committee on Water Resources Policy has been sent by the President to Congress (ENR Jan. 26, p. 21) with a request for prompt attention to its proposals.

One proposal was that no project be appropriated by Congress until it had the benefit of the report of a special board of review to be set up in the office of the President. Another was that there be more local participation in the cost of projects. Both these proposals are significant as they apply to most of the irrigation projects that would provide work in the future years for the Bureau of Reclamation because the cost per acre for drawing water to most of these projects is high. It is also true that a majority of the future projects must rely on revenue from generated hydro power to make them feasible from a cost standpoint.

If Congress is to be asked to put up money for such projects it should have full knowledge of the power potential, of the size of any subsidy involved and of the extent to which people of the regions, who are to benefit, are willing to share in their cost.

Construction and U. S. Leadership

IN HIS ADDRESS BEFORE THE ANNUAL CONVENTION of the Associated General Contractors in New York, Lt. Gen. Samuel D. Sturgis, the Army's Chief of Engineers, made some thought-provoking remarks on the construction industry's present and potential influence on the nation's world position. Both praise and criticism were included.

General Sturgis pointed out that while the Russians were gaining and, in some instances, overtaking us in the technology of industrial production, he had little doubt that either the Russians or anyone else could begin to match this country in the field of construction. He attributed this outstanding superiority to competition, and the speed and efficiency that it fosters. And he cited with proper pride the fact that both the Corps of Engineers and the Bureau of Yards and Docks award over three-quarters of their construction work on competitive bids, whereas other Department of Defense "military hardware" procurement agencies award less than 6% of their contracts on the basis of competitive bidding.

But the Chief of Engineers was also critical of construction—or at least of a situation involving construction men. In this he deplored the conspicuous scarcity in the high echelons of the Department of Defense of men with a construction background. Such men are needed, the general held, to prevent fragmentation of engineering and construction agencies and to introduce practical construction considerations into foreign treaties. Such men would also be useful in adjusting the unduly high priorities now accorded materials used in military hardware which are also required for the construction which must support such weapons.

He plead for construction men—both engineers and contractors—to join the bankers, lawyers and production men now dominant in the Defense secretariat.

Both the points made by General Sturgis are worthy of careful thought. If competition is the seed from which U. S. construction's superiority blossoms, it should be nurtured at every opportunity. If construction men in high Defense Department positions will enhance our position of military superiority, more such men should be asked to serve. Indeed, this call might well be broadened to include an even wider range of top governmental positions only remotely connected with construction. Also, in anticipation, construction leaders should indicate their willingness to serve. For, as one of the nation's great industries, construction has both a responsibility to keep itself strong and to use whatever assets it has to keep the nation strong.

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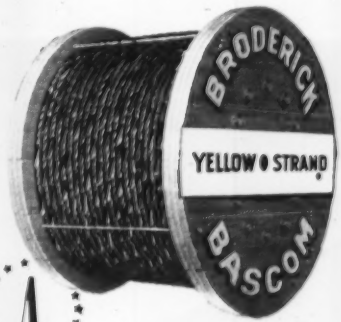

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